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MECKEL'S DIVERTICULUM IN CHILDREN*

Second Clinical and Pathologic Study With a Report of Thirteen Additional Cases

BY HENRY W. HUDSON, JR., M.D.†

IN 1930, 1931, and the first half of 1932 fifty-six articles dealing with Meckel's diverticulum have appeared in the literature of the various countries. In April, 1932, I reported with Koplik[1], thirty-two cases from the Boston Children's Hospital, the largest group, I believe, yet reported from a single institution. Thirteen additional cases (eleven from the Children's Hospital and two from the Woolson Building of the Cambridge Hospital) observed in 1932 may now be added and the entire group classified according to the symptoms produced and the histologic structure of the diverticulum. An opportunity was afforded in one case (No. 13) of this series to make certain chemical determinations of importance to the consideration of these diverticula and in view of the presentation of Lindau and Wulff[2], to offer contributory evidence to their observations in support of the peptic genesis of gastric and duodenal ulcer.

Reconsideration of an anomaly capable of causing death in ten of forty-five patients studied seems proper in view of two facts. Cases No. 4, No. 7, and No. 13 in this series and No. 6 in the group previously reported are incidences of multiple operation through failure to recognize the etiologic factor in an illness, while cases No. 1, No. 3, No. 5 and No. 6 in this series and No. 1, No. 12, No. 14, No. 21, No. 24 and No. 27 in the first represent deaths attributable to late diagnosis and operation.

PART I

Lindau and Wulff[2], collected from the literature eighteen cases of Meckel's diverticula, the mucosa of which resembled (histologically) that of the stomach and in which there was ulceration. There are many reports, notably those of Lindau and Wulff[2], Aschner and Karelitz[3], Greenwald and Steiner[4], and most recently, Mason and Graham[5], dealing with peptic ulcer in Meckel's diverticulum. In all, fifty-one cases have been collected with histologic examination in twenty-two. It has been assumed that with a mucosa similar to that of the stomach, there must be a secretion similar to gastric juice. Chemical confirmation of this assumption has been scanty. Tillmanns[6], von Rosthorn[7], and Denucé[8], in patients with Meckel's diverticulum discharging at the umbilicus, demonstrated the presence of an acid secretion (increasing after the ingestion of food) capable of digesting fibrin. Von Rosthorn determined the secretion was rich in chlorides, and Denucé demonstrated free hydrochloric acid, albumen, peptone, pepsin and rennet.

Case No. 13 in this series may now be considered in view of these observations.

G. S. Cambridge Hospital No. 518 (W.B.) Male—White. 11 years.

First Admission: May 21, 1931.

Discharged: June 3, 1931.

Diagnosis: Appendicitis, chronic.

Result: Improved.

SUMMARY:

An eleven year old boy entered the hospital complaining of pain in the right side of the abdomen of five days' duration. For several years he had complained of indefinite abdominal pain at intervals of three to four weeks. Five days before admission he complained of pain about the umbilicus, was feverish, and vomited six times. The symptoms persisted for four days when he felt better and the vomiting ceased. A local physician thought he had appendicitis and after some persuasion, the parents brought the child to this hospital.

The physical examination revealed a slender, pale, rather apathetic boy in no apparent distress. The only positive physical finding was slight tenderness on deep pressure over the right lower quadrant of the abdomen.

LABORATORY DATA: Intradermal tuberculin 1/1000 negative. Urine: negative at four examinations. Hemoglobin 85%. White blood cells: 12,000, differential not recorded.

X-ray: A flat plate of the abdomen showed no calcified glands and no calculi.

COURSE: He was observed two days during which the tenderness persisted. There was no fever.

On May 23, laparotomy was performed. The appendix appeared injected and there was edema of the mid portion. It was removed and no further exploration made.

Histological examination S-31-178 revealed a moderate increase in connective tissue throughout the entire wall. The vessels throughout were moderately engorged. Numerous lymphatics were occluded with lymphocytes.

ANATOMICAL DIAGNOSIS: *Marked Chronic Appendicitis.*

*From the Surgical Departments, Harvard Medical School and Boston Children's Hospital.

†Hudson — Assistant in Surgery, Harvard Medical School. For record and address of author see "This Week's Issue," page 558.

Second Admission: March 21, 1932.
Discharged: April 27, 1932.
Diagnosis: Meckel's Diverticulum.
Result: Relieved.

INTERVAL NOTE:

The child has been well except as mentioned in the present illness.

C. C. Abdominal pain.

P. I. Last night the boy complained of abdominal pain, sudden in onset and at first a dull ache then paroxysmal and cramp-like. It was referred to the umbilicus and did not radiate. After two hours the pain ceased. There was nausea but no vomiting. He slept well. He stated he was tender about the umbilicus. No stool abnormality had been noted. A physician reported finding a tender mass just to the left of the umbilicus. There was said to have been no fever.

Since his first admission there have been attacks similar to this one occurring two to three times a month and apparently related to periods of constipation.

P. E. A well-developed, slender boy of 12, lying comfortably in bed and complaining only of tenderness about the umbilicus. Temperature 99.2 degrees. Pulse 88. Respirations 20.

Head: No deformity or tenderness.
Eyes: Pupils react to light and accommodation. No inflammation.
Ears: No otorrhea or tenderness.
Nose: No discharge or obstruction to breathing.
Mouth: Tonsils and uvula absent. No inflammation.
Neck: Scattered, pea-sized, non-tender lymph nodes.
Thorax: Bilaterally symmetrical. Movements on the two sides are equal.
Lungs: P. N. resonant. Breath sounds vesicular. No râles.
Heart: Not enlarged. Regular in rate and rhythm. No murmurs.
Abdomen: There was an indefinite mass about 10 cm. in diameter just to the left of the umbilicus which was tender, resistant, and apparently fixed. Right rectus wound well healed.
Rectal: Negative.
Extremities: Normal.
Skin: Smooth, dry and inelastic.

LABORATORY DATA: Urine: Negative at six examinations. On admission red blood cells, 5,200,000. White blood cells, 15,000. Polymorphonuclears 56, lymphocytes 43, eosinophiles 1. Hemoglobin 80%.

X-ray: (No. 16591). The esophagus, stomach, and duodenum are normal. There is no ulcer or malignant disease. Six hour examination shows some gastric residue. Barium enema shows no obstruction. The cecum filled well. No sinus could be demonstrated. There was some gas in the small intestine, due to some partial obstruction in the lower ileum.

COURSE: The temperature rose to 101 degrees on March 22. Examination at that time revealed a fiery red, diffuse, tender, cellulitis of the abdominal wall below the umbilicus extending from side to side. The inflammation appeared limited to the wall and did not seem secondary to peritoneal inflammation. Poultices applied which were grateful to the patient.

On March 23 the temperature remained 101 degrees. The cellulitis had lessened leaving a fluctuant area at the inferior margin of the umbilicus. Under nitrous oxide this was first aspirated, then incised, and about two ounces of old dark blood evacuated. A culture was made from which there was no growth. The wound discharged sanguineous material until March 28. The fever abated and the redness and induration lessened.

From March 28 to April 11, the wound discharged clear, whitish, viscid material which was acid in reaction and which tended to digest the surrounding skin. Methylene blue, given by mouth, and excreted with the urine, did not alter the discharge. The material turned a light brown on contact with gauze or exposure to air.

Operation: Resection of Meckel's diverticulum.

The abdominal wall was prepared with ether and tincture of iodine and suitable sterile draping applied. The old operative scar was excised and the peritoneum entered without incident. A mass was felt adherent at the umbilicus. This proved to be an hour-glass shaped diverticulum, arising from the terminal ileum, constricted in its mid-portion and communicating by a saccular dilatation with the umbilicus. There was no evidence of peritonitis. No further exploration was made.

An intestinal clamp was applied at the sessile base of the diverticulum and the diverticulum was excised and with it the umbilicus and surrounding skin (See Ill. 1). The defect in the ileum was sutured in two layers. The lumen of the ileum was not seriously narrowed.

The abdominal wound was closed in layers without drainage.

April 27, 1932: The patient was discharged home today with a clean healed wound. The convalescence was afebrile and comfortable.

Follow-up Notes: In June, 1932, the child was under the observation of a physician as a potential case of rheumatic heart disease. There were no symptoms referable to the abdomen.

PATHOLOGICAL REPORT: S-32-161

Gross Description: The specimen consists of the resected umbilicus and an attached portion of persisting vitelline duct. The skin about the umbilicus is indurated and firm. At the margin of the incision which lies to one side of the umbilicus there is an area of digestion of skin measuring approximately 4 x 6 mm. The umbilicus in its central portion presents a defect which measures approximately 2 mm. in diameter. This leads through the underlying indurated tissue and opens into a chronically inflamed sinus tract which measures about 5 mm. in length. From this sinus tract there is free communication with a cystic mass which measures approximately 3 cm. in length and 15 mm. in diameter. This cyst is opened. It is lined by grayish-pink mucosa. This mucosa is thrown into folds and distinctly resembles gastric mucosa. Viscid pale grayish-white fluid bathes the mucosa. There are no ulcerations. This cyst lined by gastric mucosa is attached by a narrow cord to a structure which resembles ileum. This measures 3.5 cm. in length and is 27 mm. in circumference. This is lined by a pale grayish-brown mucosa which has the appearance of mucosa normally found lining the ileum.

Impression: Meckel's Diverticulum.

Microscopic: Two sections. The histology of this anomalous structure is essentially that of acid secreting gastric mucosa with a wall composed of smooth muscle and dense connective tissue. The mucosa which lines the diverticulum presents numerous large glands which have both chief and parietal cells. There are no ulcerations of, or hemorrhages into, the mucosa. A number of mononuclear cells and lymphocytes greater than normal are found in the tunica propria. Occasional focal accumulations of lymphoid cells are also observed. The muscularis mucosa is present as a well-defined structure. The

musculature is relatively thick and not regularly arranged as found in the wall of a normal stomach. It is quite well developed. In the peripheral portion of the musculature there has been partial replacement by dense fibrous tissue. In this connective tissue and around small blood vessels there are focal accumulations of lymphoid cells. Occasional polymorphonuclear leucocytes are also seen. External to the musculature there is a thick band of tissue composed of laminated strands of collagen.

The viscid, mucoid, pale white fluid removed from the diverticulum by colorimeter determination is estimated to have a P_H of between 3.4 and 3.5. Determination of chloride content of this fluid by titration against a known alkali showed 148.6 cc. of N/10 NaOH to be necessary for neutralization of 100 cc. of the fluid. These two findings identify the secretion definitely as being chemically consistent only with gastric secretion.

Diagnosis: Meckel's Diverticulum.

ILL. NO. 1. The excised diverticulum and umbilicus in Case No. 13.

It would appear that the observations on this patient and those of Tillmanns, von Rosthorn and Denucé strongly support the existence of a gastric-like secretion in those diverticula, the mucosa of which resembles that of the stomach.

Part II

The origin of Meckel's diverticulum has been described repeatedly and need not be reconsidered here. It is estimated from necropsy statistics and observations at laparotomy to be present in from two to four per cent of all individuals and occurs predominantly in males. When present it is capable of producing various symptom complexes which we may classify as follows:

MECKEL'S DIVERTICULUM

A. Gastric type mucosa with ulceration.
   1. Without perforation but with hemorrhage.
   2. With perforation and with or without hemorrhage.
B. Advancing point and presumable cause of intussusception.
C. Diverticulitis with acute inflammation and necrosis.
D. Intestinal obstruction, other than intussusception.
E. Umbilical fistula.
F. Tumor site.
G. Enterocystoma.
H. Duplex ileum.
I. Mesenteric cyst.
J. Tuberculosis of Meckel's diverticulum.

The current group of thirteen cases is reported in Table I.

An analysis of these cases and the thirty-two we reported in April, 1932, reveals a sex incidence of thirty (66.6) male and fifteen (33.4) female. The male preponderance is less marked in this group than in some of the collected groups. Our youngest patient was four hours old at the time of operation and the oldest was twelve years. Seventeen were operated on under the age of two years. The cases fall into the following groups:

In the group of forty-five there were ten deaths attributed to the diverticulum or surgery of the diverticulum, a mortality of twenty-two per cent. In every instance delay in diagnosis and operation is noteworthy, *only one being referred within the first twenty-four hours after onset of symptoms,* despite dramatic evidence of hemorrhage in seven, and abdominal pain in three.

Part III

ULCERATION OF MECKEL'S DIVERTICULUM WITH MUCOSA SIMILAR TO THAT OF THE STOMACH

It is this group to which particular attention has been directed by Lindau and Wulff[2], Aschner and Karelitz[3], Greenwald and Steiner[4], and Mason and Graham[5].

We may add to the total group of fifty-one with twenty-two examinations, our series of fourteen with twelve microscopic examinations.

In eleven of the twelve diverticula examined in this group, eleven presented mucosa similar to that of the stomach and in the twelfth, such mucosa was present in islands surrounded by intestinal mucosa. When ulceration was demonstrated it was not of the gastric type mucosa but adjacent to it at the diverticulum neck or in the mucosa of the communicating ileum. This is in accordance with the observations of the authors mentioned above. However, in our cases the ulceration was always acute in type. A callus base described by Lindau and Wulff[2] was

TABLE 1

Number	Age and Sex	Duration, History, Physical Findings	Operative Findings	Pathologic Report	Result
(1) 155798	11 M	24 hours' melena, beginning with black jelly-like stool. Frequent dejections, red blood, vague aching pain in lower abdomen. Tinnitus. Headache. Pallor. Pulse 160. Slight spasm and tenderness two inches to left and below umbilicus. Red blood cells 1,550,000. Hemoglobin 40%.	Blood filled diverticulum. Small intestine blood filled. Diverticulectomy. Ileostomy. Transfusion before operation. See illustration.	S-31-472. Acute ulcer (3 mm.) at junction of two types (gastric and intestinal) of mucosa.	Death from hemorrhage.
(2) 153126	3/12 M	1st admission: 3 days' green watery diarrhea followed by 4 days' black stools. One day intermittent colic with pallor. Examination negative. Red blood cells 2,900,000. Hemoglobin 45%. Stools guaiac positive. Course: following operation and transfusion rapid convalescence and gradual disappearance of blood in stools.	Punctate hemorrhages in mesentery of ileum. Perforation of small mesenteric cyst near ileum. Bleeding point within cyst apparently lined with mucous membrane. Ligation and suture of cyst.	S-32-6. See full report and illustrations Nos. 5 and 6.	Living at 18 months asymptomatic.
		2nd admission: Well for three months, then returned because of greenish watery stools of 36 hours' duration. Examination negative. Stools guaiac positive. Red blood cells 4,500,000 on admission and 2,790,000 four days later.	Transfusion. Intramesenteric diverticulum about 30 inches long, paralleling ileum for about two feet, then turning at an angle and running toward root of mesentery. No communication with ileum demonstrated. Resection nine inches of diverticulum.		
(3) 157046	6/12 M	72 hours' pain, vomiting, melena. Acutely and critically ill. Fecal vomiting. Erythema of abdominal wall most marked about umbilicus. Generalized muscle spasm. Tender umbilical mass. Red blood cells, 3,450,000. Hemoglobin 50%. White blood cells, 5,850.	Perforation Meckel's diverticulum with free blood in peritoneal cavity. Resection of diverticulum. See illustration.	S-32-56. Gastric type mucosa. Marked inflammation of diverticulum with perforation.	Death 6 hours after operation.

TABLE 1 *(Continued)*

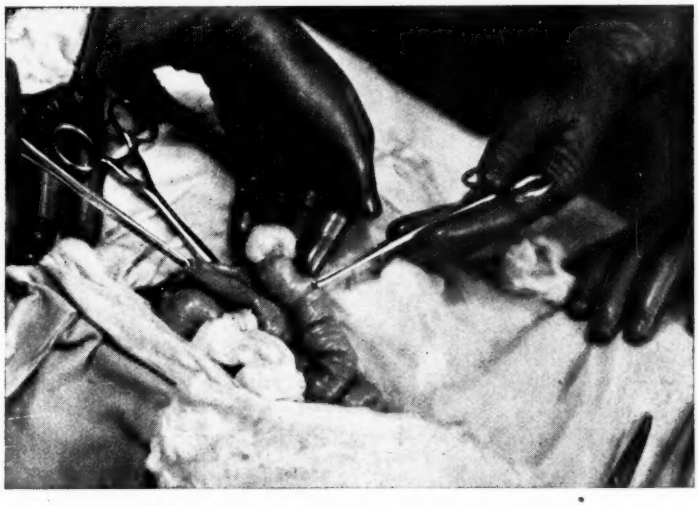
Number	Age and Sex	Duration, History, Physical Findings	Operative Findings	Pathologic Report	Result
(4) 160693	11 F	Appendicectomy elsewhere one year before admission. For six months attacks of vague abdominal pain associated with dark stools or recognizable blood. Two days severe abdominal pain with melena. Tenderness and muscle spasm below and just to right of umbilicus.	Diverticulum 2x3 cm. arising from lateral surface of ileum 24" above ileocecal valve. Adherent to mesentery. Resection diverticulum.	S-32-246. Gastric type mucosa. Chronic inflammation of diverticulum. No ulceration found.	Recovery. Well 6 months after operation.
(5) 162001	1 8/12 M	Four days' paroxysmal abdominal pain and melena. Acutely and critically ill. Distended abdomen.	Inverted diverticulum, initiating ileo-colic intussusception. Reduction intussusception. Diverticulectomy. Ileostomy.	S-32-310. Diverticulum 6x22 mm. which was necrotic but acid and chief cells recognized in mucosa.	Died 4 hours after operation.
(6) 163854	5/12 F	Restlessness 4 days, vomiting 4 days. Melena 3 days. Mass right upper quadrant.	Ileo-ileo colic intussusception with inverted diverticulum as advancing point. Reduction intussusception. Resection gangrenous diverticulum.	S-32-396. Necrosis and inflammation of diverticulum. Character of mucosa could not be made out.	Died 50 hours after operation.
(7) 90601	10 M	Two and a half years before admission two operations for appendicitis with peritonitis done in another hospital. Intermittently discharging fecal fistula in left lower quadrant.	Sinus tract continuous with Meckel's diverticulum. Excision scar, sinus and diverticulum en bloc. See illustration.	S-32-480. Intestinal type mucosa.	Recovery.
(8) 3	3 F	Fourteen hours' severe abdominal pain with tenesmus and melena. Right upper quadrant mass. ——— Well two months. Readmitted for diverticulectomy.	Intussusception with inverted Meckel's diverticulum as advancing point. Reduction intussusception. ——— Diverticulectomy. Incidental appendicectomy.	No examination.	Recovery.

TABLE 1 *(Concluded)*

Number	Age and Sex	Duration, History, Physical Findings	Operative Findings	Pathologic Report	Result
(9) 129154	9 M	Incidental finding at laparotomy.	Appendicectomy. Diverticulectomy. Lysis adhesions.	S-32-559. Intestinal type mucosa.	Recovery.
(10) 105149	7 M	Paroxysmal colicky pain of seven days' duration.	Large diverticulum. Diverticulectomy. Appendicectomy.	S-32-569. Duodenal type mucosa.	
(11) 167181	1 F	July, 1932, vomited once. Crying and irritable. Melena. August, 1932, vomited once. Melena for two days. From August to December, 1932, five periods of melena lasting for three days. Examination negative. Red blood cells, 3,590,000. Hemoglobin 50%. Bleeding time 45′. Clotting time 2.5′.	Blood visible within ileum. Blood filled diverticulum measuring 1x½″. Diverticulectomy.	S-32-585. Gastric type mucosa. No inflammation. No ulceration demonstrated.	Recovery.
(12) Cambridge Hospital (W. B.) 898	3 weeks M	Diverticulum discharging at umbilicus. Bilateral inguinal hernia. Hare lip. Cleft palate. Congenital absence of eyes (total).	Diverticulectomy and excision umbilicus at 25 days. Bilateral herniotomy at 34 days.	Intestinal type mucosa.	Died at 2 months of pneumonia.
(13) Cambridge Hospital 518 W. B. 928 W. B.	11 M	Case fully reported.	In text.	S-32-161 (C. H.). Gastric type mucosa.	Recovery.

TABLE 2

Clinical Classification	Number of Cases	Type of Mucosa		Recoveries	Deaths
Gastric type mucosa with ulceration and hemorrhage		Gastric	12		
Without perforation	10	Not classified	2	9	1
With perforation	4			1	3
	14			10	4
Advancing point of intussusception	9	Gastric	3		
		Ileal	2		
		Not classified	4	6	3
Diverticulitis	6	Gastric	1		
		Ileal	2		
		Not classified	3	4	2
Intestinal obstruction other than intussusception	7	Gastric	2		
		Duodenal	1		
		Ileal	1		
		Colonic	1		
		Not classified	2	7	0
Umbilical fistula	1	Ileal	1	0	1
Duplex ileum	1	Both gastric and ileal		1	
Incidental	7	Gastric	1		
		Ileal	3		
		Colonic	1		
		Not classified	2	7	
	45	Gastric	20		
		Intestinal	9		
		Colonic	2		
		Duodenal	1		
		Not classified	13		
			45	35	10

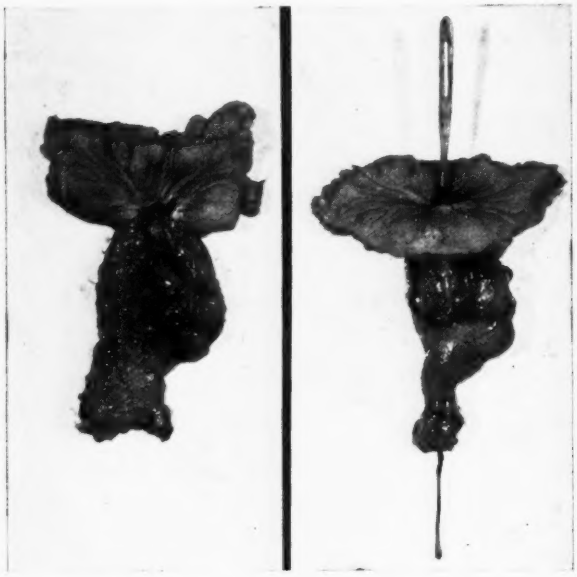


ILL. NO. 2. Operating room photograph of Case No. 1. Blood was visible through the wall of the ileum.

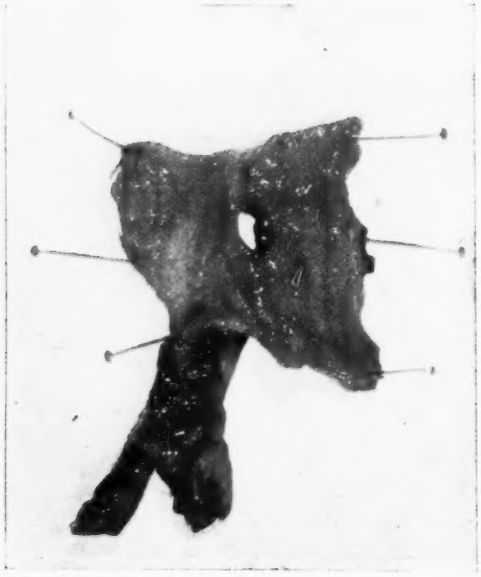
not found, nor were they "usually chronic in type, penetrating or perforating, and resembled the peptic ulcer of the stomach and duodenum" (Aschner and Karelitz[3]). This discrepancy is reconcilable, when the clinical histories of our cases are compared with the others, as our observations have been limited, with two exceptions, to patients presenting an acute onset of symptoms while in many of the collected group of fifty-one there was a long history of intermittent melena with or without abdominal discomfort or actual pain.

Clinically then, we may recognize a symptom complex of infancy or childhood characterized by either a chronic interrupted, or acute history of melena, accompanied by abdominal discom-

fort or paroxysmal colicky pain and accompanied by nausea and sometimes by vomiting. The blood may be fresh or digested, mixed with or separated from the stools, and the amount may be slight or so great as to produce the picture of a critical hemorrhage (Case No. 1). If



ILL. NO. 3. The resected diverticulum, sinus and scar in Case No. 7.



ILL. NO. 4. The perforated diverticulum in Case No. 3.

the other sources of intestinal hemorrhage in this age group (acute nutritional disease, intussusception, polyp, anal fissure, dysentery, ulcerative colitis, primary blood disease and tuberculosis) can be excluded, a presumptive diagnosis of Meckel's diverticulum is warranted. Such diagnosis was made, in fact, in nine of the fourteen cases in this group and in all seen within the past three years.

X-ray examination is disappointing. In only one instance has a correct preoperative diagnosis been made by x-ray and in so far as we can determine, no other case has been reported[1].

At operation, the diverticulum may be demonstrated blood-filled, often with blood visible through the wall of the adjacent intestine. There may or may not be perforation with peritonitis. There is often a moderate inflammatory reaction but necrosis is rare in this group in contradistinction to the group in which diverticulitis without ulceration is seen.

INTUSSUSCEPTION PRESUMABLY INITIATED BY MECKEL'S DIVERTICULUM

In the nine cases studied, the history and physical examination did not differ from those of the more common idiopathic type of intussusception. In view of the persistent errors in recognition of this serious emergency, the usual history and physical findings are worth repeating. Commonly the patient is about nine months old. Suddenly, he exhibits evidence of acute, severe, paroxysmal, and colicky abdominal pain with shock. He cries out in pain, flexes the thighs on the abdomen, becomes pale or cyanotic and often perspires freely. After a variable period, the pain ceases, evidence of shock is no longer present, and he may appear very well until the next paroxysm. The paroxysms occur irregularly, but with a tendency to greater frequency. Usually, mucus and later mucus and blood are expelled from the rectum. Vomiting may occur but if not present does not exclude this type of obstructing lesion. On examination there may be evidence of shock and frequently the intussusception is palpable as a sausage-shaped mass somewhere along the course of the colon. If the intussusception has advanced sufficiently, the advancing point may be palpated by rectal examination or it may even protrude through the anus.

At operation when the intussusception is reduced, in this group, the advancing point of the intussusceptum is an inverted Meckel's diverticulum.

In five histologically examined, the diverticula presented intestinal mucosa in three and gastric in two.

DIVERTICULITIS

In this group the syndrome may be identical with that seen in appendicitis in childhood. Abdominal pain, nausea and vomiting, slight fever (unless peritonitis is present), and leucocytosis, together with muscle spasm and local tenderness are present. The local tenderness tends to be near the umbilicus, but this is of little help in differentiation from appendicitis. If blood is present in the stool it may lead to a correct diagnosis.

At operation, usually performed with a preoperative diagnosis of appendicitis, the appendix may not appear inflamed which should lead to careful examination of the ileum. The diverticulum may be inflamed, fibrin covered, and adherent or free. It may be perforated and there will then be peritonitis.

Microscopically, the diverticulum exhibits acute inflammation with necrosis and gangrene. This makes recognition of the type of mucosa difficult or impossible. In three cases where differentiation was possible, the mucosa was similar to that of the ileum in two and to that of the colon in one.

MECKEL'S DIVERTICULUM CAUSING INTESTINAL OBSTRUCTION OTHER THAN INTUSSUSCEPTION

The classification of Halstead and illustrative diagrams were presented in our earlier paper[1]. Seven of our cases fall in this category.

In those instances when obstruction was produced through adhesion of the diverticulum to other structures, it is probable that there was either a preceding diverticulitis or ulceration with inflammation. Of the seven, two had gastric type mucosa, and one each, duodenal, ileal and colonic.

UMBILICAL FISTULA

Case No. 12 illustrates this type of the anomaly. It is thoroughly considered by Cullen[10].

NEOPLASM DEVELOPING IN MECKEL'S DIVERTICULUM

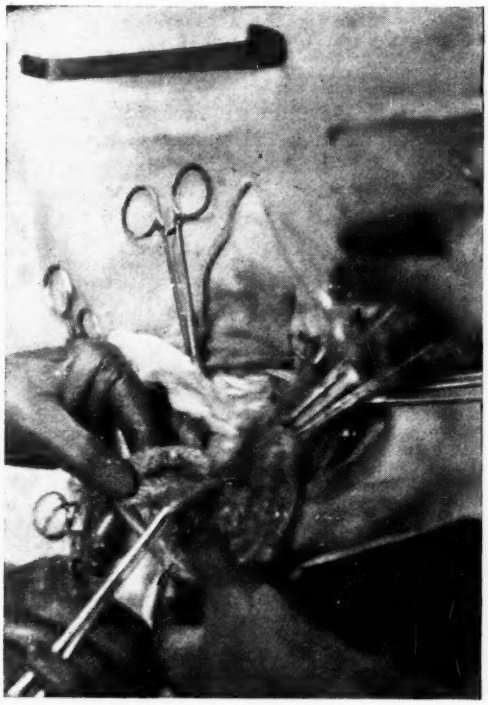
We have not encountered neoplastic disease though Wiseley[11] has reported a medullary carcinoma, Michael and Bell[12] a primary adenocarcinoma, Cascino[13] an embryologic tumor (hamartoma), and Faust and Walters[14] a fibrosarcoma of Meckel's diverticulum.

ENTEROCYSTOMA

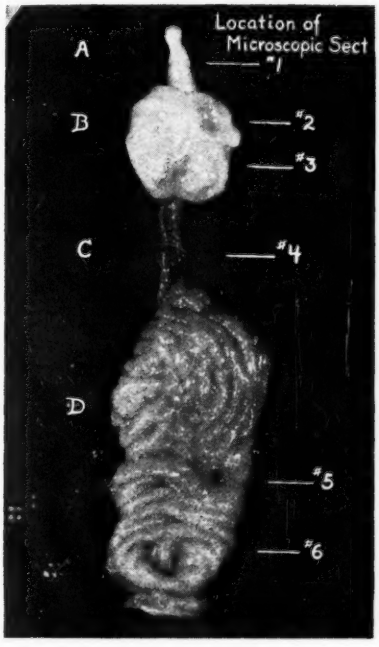
This has not been seen in our cases. A case was reported by Bourguignon[15]. Case No. 3 might also be considered here, but as stated, the sequence of events and histology lead us to classify otherwise.

DUPLEX ILEUM AND MESENTERIC CYST

Duplex ileum has been discussed by Borrmann[16] who reports a case and reviews the three others previously reported. His case is very similar to our case No. 2. This patient now 19 months old is still under close observation but has had no further symptoms referable to the remaining and large segment of the diverticulum. This histologic structure of the removed segment (q.v.) coincides so closely with other diverticula, definitely Meckel's in type, that we feel, with Borrmann, that these are cases of unusual diverticula and not of a reduplicated ileum.



ILL. NO. 5. Operating room photograph of Case No. 2 (Duplex ileum type). The diverticulum was several feet in length, enclosed between the leaves of the mesentery of the ileum and ran parallel and close to the distal ileum for about two feet and then turned at a ninety degree angle to disappear in the root of the mesentery.



ILL. NO. 6. The resected portion of the diverticulum in Case No. 2.

This specimen has the appearance of a part of the intestinal tract. It is definitely in four sections. The whole length is 9.5 cm. Part A is 1 cm. in length and was described at operation as being lost in the root of the mesentery. This has the appearance of a cord about 4 mm. in thickness. On cutting it open, it is found to contain a small lumen and in the resection this lumen has been cut across. Adjacent to this is Part B, which measures 2 cm. x 2 cm. when opened. Part C is 1.5 cm. in length and 3 mm. in width when opened. It has a similar appearance to Part A, except that it is a little more hemorrhagic. The fourth section, Part D, being the largest, is 5 cm. in length and when opened out is 2 to 2.5 cm. in width. The lumen, which is patent throughout the specimen, is lined with

a mucous membrane. The mucosa of the largest section is folded in fairly normal looking rugae which run across the specimen for the distal 1.5 cm. and in folds generally along the length of the specimen for the next 2.5 cm. At approximately the junctions of these two portions distinguished by the configuration of the rugae, there is a small punched-out ulcer with raised and undermined borders 2 mm. in width, the base of which is quite hemorrhagic. The serosal surface outside this ulcer is definitely thickened. The mucosa of Part B is paler and the rugae are arranged in less definite folds of a more or less circular configuration. When opened at operation, there was no fecal material seen within the lumen. It was empty except for a slight amount of mucous material.

There are six sections taken for microscopic study. These sections are taken as indicated in the diagram, No. 1 from Part A, No. 2 and No. 3 from Part B, No. 4 from Part C, No. 5 through the ulcer and No. 6 through Part D.

Section No. 1. This section is cut across the unopened lumen of Part A. The mucosa is in a general way characteristic of the small intestine. It is thrown up into numerous villi and lined with a simple columnar epithelium. There are a moderate number of goblet cells which give evidence of mucous secretion. The muscularis is composed mostly of circular muscle fibers with only a few longitudinal bundles. There is no evidence of inflammation or hemorrhage in this section.

Section No. 2 is cut across the point where the small lumen of Part A opens into the larger second portion. At this point there is a transition from the mucosa described above to a mucosa resembling gastric mucosa. This is characterized by the appearance of rather typical gastric glands. The mucosa is thrown into numerous folds. Scattered through the tunica propria are abundant eosinophiles. The submucosa and muscularis are not unusual. A second section (No. 3) further along in this portion shows the same type of mucosa. In addition there are a few small, highly cellular lymph follicles.

A Section No. 4 through the thin connecting portion (Part C) shows a reversion to the type of mucosa found in Part A The mucosa here is thinned out and less well preserved.

The large portion (Part D) shows again a fairly typical gastric mucosa similar to Part B. Here again there is abundant eosinophilic infiltration such as is frequently found in adult gastric mucosa. There is a greater number of lymph follicles here than seen in the previous sections, and the propria is somewhat more dense and cellular, containing a larger number of lymphocytes. One section transects the ulcer which was described grossly. The ulceration has entirely destroyed the mucosa and extends through the submucosa involving part of the muscularis. There is a dense fibroblastic reaction at the base of the ulcer and a serosal proliferation of fibroblasts. Numerous pyknotic nuclei and polymorphonuclear leucocytes are scattered through the regions just below the base of the ulcer. There is considerable hemorrhage into the underlying serosa. No blood vessels can be seen to be eroded by the ulcer. One neighboring vessel is partially occluded by an organizing thrombus.

Further observation of material and a study of other cases reported prompt me to qualify our previous statement that "a mesenteric base should lead one to classify the diverticulum as of some other origin". Certainly if the cyst is situated in the mesentery of the lower ileum and has a mucosa of gastric type it would be difficult to say it was not a detached, incarcerated (within the mesentery) Meckel's diverticulum. Heterotopic gastric mucosa is not common and since, in our experience, Meckel's diverticula have such mucosa in 67%, the findings of a cyst so lined, in an anatomical location where Meckel's diverticulum is found, support such a theory. This view is held by Struthers[17].

TUBERCULOSIS OF MECKEL'S DIVERTICULUM

Michael[18] has reported a case of tuberculosis of Meckel's diverticulum and refers to eight cases reported by various authors.

TECHNICAL CONSIDERATIONS

The most important consideration is to urge careful exploration whenever feasible and always when there is failure to demonstrate appendiceal or other pathologic lesion. The extraordinary variation in position, size, shape and mesenteric relationship demands a very careful inspection. A Meckel's diverticulum has been reported as high as forty inches above the ileocecal valve. They may be large or tiny finger-like projections, which are easily overlooked and when intramesenteric or adherent to mesentery may be extraordinarily difficult to visualize (Case No. 2).

Harbin[19] has dealt extensively with the technique of resection, enterorrhaphy, and control of blood supply.

Greenwald and Steiner suggest transverse suture to avoid encroachment on the lumen of the adjacent ileum.

It is essential to include a margin of adjacent ileum to insure removal of an ulcer, if present, since all observers are agreed that it is the ileum, or at least intestinal rather than gastric mucosa, where ulceration is found.

The practice of excision of the diverticulum and inversion by purse-string suture is to be condemned in all cases.

SUMMARY

Thirteen additional cases of Meckel's diverticulum observed within a year are reported. Together with a previously reported group of thirty-two, they are classified according to the symptom complex produced and the histologic structure.

Confirmatory evidence of a gastric type secretion in those diverticula presenting mucosa similar to that of the stomach, is presented.

A plea is made on the basis of preventable deaths and avoidable secondary operations, for careful search for a diverticulum and its removal at laparotomy.

The method of excision and inversion by purse-string suture is condemned.

I wish to acknowledge the courtesy of Dr. W. E. Ladd in allowing me to include cases No. 4 and No. 9 which are from his private practice and to reproduce illustration No. 7 in which he was the operator.

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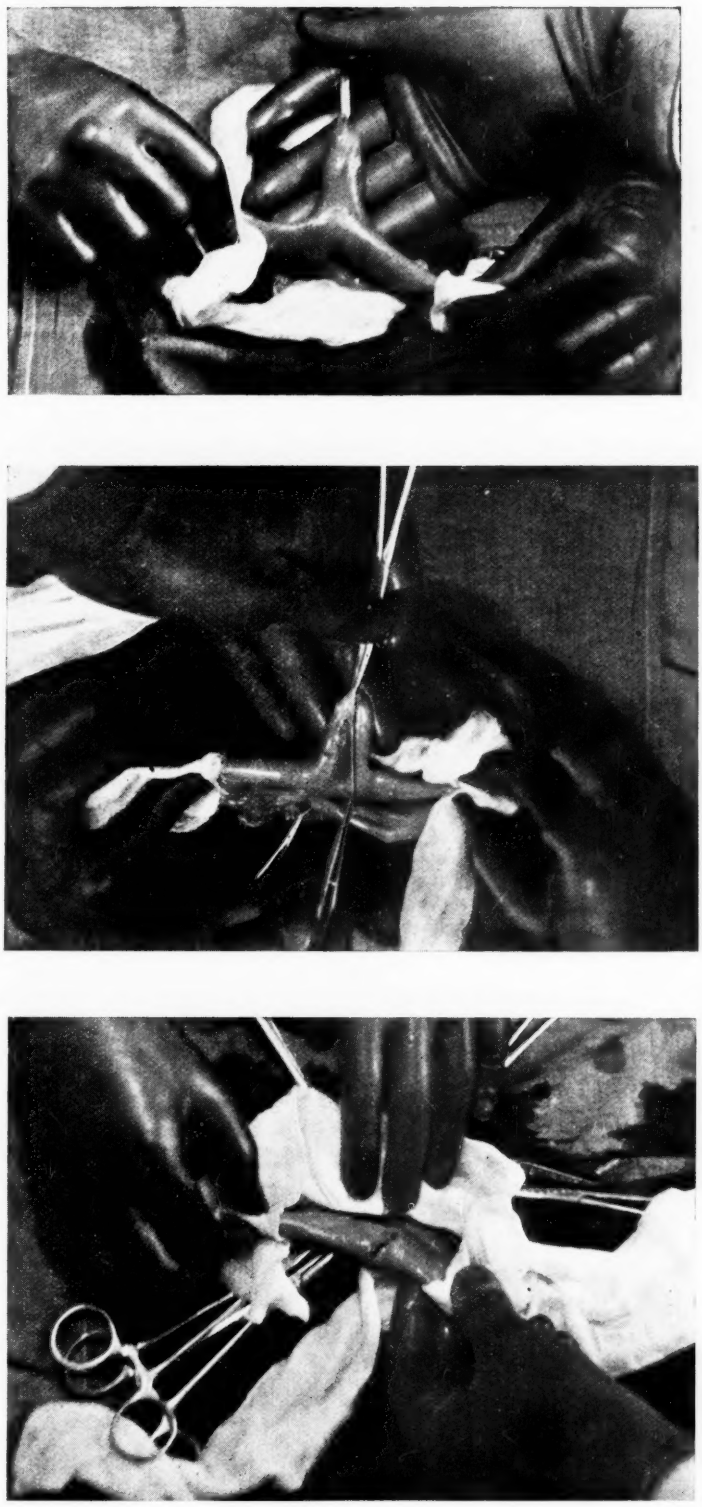

ILL NO. 7. The diverticulum and method of enterorrhaphy in Case No. 10.

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NEW ENGLAND SURGICAL SOCIETY

LIPOMATA OF THE UTERUS WITH REPORT OF A CASE*

BY FRED B. LUND, M.D.†

LIPOMATA as a usual thing are simple and benign, and occur usually in those parts of the body where fat is present, notably therefore under the skin in the subcutaneous tissues. Next in order come the subfascial tumors, and those in the interstitial tissue between the muscles, where, in obese people, a good deal of fat is found. Next come subserous tumors, among which the largest are the retroperitoneal fatty tumors which may fill the whole abdomen and become serious on account of their size. Rarer still are submucous fatty tumors. Fatty tumors are very rare in the meninges of the brain or spinal cord, and rarer still are those of the heart muscle, of which a few have been found at autopsy. Fatty tumors of the kidneys are not very rare, and are believed to be due to the chance inclusion of some of the abundant perinephric fat in the kidney during development.

Fatty tumors have been reported in the ovaries, and in the uterine wall they are as Merkel says, extremely rare ("enorm and exquisit selten" are terms that he applies to them). They occur in the muscle of the uterus, and may, and ordinarily do, lie in the uterine wall, but may be extruded into the canal in the form of a polyp. They differ from fibroids by their soft feel, and when the uterine muscle is stretched over a large one they feel exactly like a pregnant uterus. The diagnosis of pregnancy is usually excluded by the fact that they occur almost always in women over sixty years of age, and the cervix is felt to be the small atrophied cervix of an old woman. They have been explained as fatty degeneration of myomata, but this explanation is probably wrong, as they are usually encapsulated masses of pure fat, which shell out even more easily than do myomata. Rarely have they any muscle tissue in them. They are better explained as growing from fat accidentally included in the uterine muscle during embryonic growth.

The following is a résumé of the subject by Walkoff in Rindfleische's Festschrift (see references).

In the year 1899 Brüning published for the first time a case of intramural lipomyoma of the uterus. Since then several other tumors of the same sort in this organ have been reported. On looking through these published cases, one finds that in lipoma and lipomyoma of the uterus we are dealing with spherical tumors of the uterine wall, which usually appear at an advanced age. Their position is usually intramural and subserous, or they may project into the cavity of the uterus in the form of a polyp. They are sharply differentiated from the uterine tissue, without a special fibrous capsule. In one case only, described by Merkel, unstriped muscle fibres from the interior wall extended into the interior of the tumor. Clinically they are classified as benign, in that in general they cause little trouble. Malignant degeneration had not been observed in any of them until Walkoff reported a case of lipoma of the uterus with sarcomatous degeneration, a case in which there was also present a lipoma of the left kidney in a woman of eighty-one years.

The following case is reported on account of the rarity of these tumors, the complicating factors that led to a wrong preoperative diagnosis and the ease of the hysterectomy, made possible by the atrophied cervix, and the fact that the broad ligaments, veins and all, were hardly more than a sheet of paper. The fact of the ease of removal made it possible to relieve the condition of gall stones found at the same time.

Mrs. E. G., aged 71, well-developed and moderately obese, had suffered for two weeks from nausea, vomiting and pain in the abdomen, which had come on suddenly. One year ago she had had a similar attack. Continuous dull pain in epigastrium which did not radiate. On examination her temperature

FIG. 1. Tumor split open showing shrunken body of uterus on the surface. The uterus originally covered the tumor.

*Read at the Annual Meeting of the New England Surgical Society at Hartford, Conn., October 1, 1932.

†Lund—Surgeon-in-Chief, Carney Hospital. For record and address of author see "This Week's Issue," page 558.

was 101°, white count 18,700. She was tender along the whole right side of the abdomen with marked spasm along the whole right side and a large fluctuating tumor in the right lower quadrant. She showed slight jaundice, but the conclusion that her physician, Dr. Allard, and I arrived at was that she probably had gall stones, but the most important thing was an appendix abscess. So we proceeded at once to operation. Under ether, with relaxation of the spasm, the tumor was found to move freely from right to left of the abdomen, and felt like a large cyst. So a median incision was made and the tumor found to be a large soft bluish fluctuating uterus, the size of a four months' pregnancy. The cervix was about the size of a lead pencil, the ovaries and tubes atrophied, and the broad ligaments thin like paper. It was but the work of a moment to cut across the attachments and sew over the cervix, then palpate the gall bladder and find it contracted upon a large number of stones. With the hand inside as a guide, an oblique incision was quickly made below the ribs, the bladder brought out and emptied, and a tube tied in. There was no shock, but convalescence was a bit stormy from dilatation of the stomach. She went home in two and a half weeks. Jaundice has not recurred and she has remained well.

Pathological Report by Dr. F. B. Mallory: "Gross-specimen uterus amputated through cervix; as received the uterus has been opened and retracted away from a perfectly encapsulated intramural globular tumor mass 14 cm. in diameter. Cut surface is uniform, yellow, greasy and resembles adult fat. The uterine cavity has been somewhat distorted by the tumor. With it was received a negative tube and a small atrophic ovary, presenting considerable fat in the broad ligament and hilus of ovary, and on the serosa of the tube. Diagnosis: Lipoma of Uterus."

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Discussion

Dr. John W. Keefe, Providence, R. I.: *Mr. President and Gentlemen*—I am frank to say I never have seen a case of lipoma of the uterus, so I consulted the literature and have found that very little has been written about it in this country, though a number of German writers have described the condition.

There is some question as to the cause of these tumors, but I think the consensus of opinion is that they are late developments of mesoblastic rests, and so they may be classified as embryonic growths. They are usually benign, although it is possible to have sarcomatous degeneration.

Dr. Fred B. Lund: I have nothing further to say except that it was interesting that they have been extruded into the uterus as polyps in one or two cases.

COMMENTS ON THE TEACHING OF STUDENT NURSES

By May Ayres Burgess, Ph.D.

Improvements in both the nursing service given hospital patients and the type of instruction given students may result if the lessened turnover among the teaching and supervisory nursing staff of hospitals continues. This hopeful view is taken by May Ayres Burgess, Ph.D., director of the Committee on the Grading of Nursing Schools, who writes in the March number of the *American Journal of Nursing.*

Hospital nurses are holding fast to their present positions because of the increased competition brought about by the economic depression and the overproduction of nurses. Three years ago, at the time of the first grading, the Committee found that the turnover among nurses in hospital teaching and supervisory positions was so great that in most schools a large proportion of the faculty had entered the hospital more recently than had the senior students. There was little real opportunity for students to become acquainted with their teachers or for teachers to carry through a carefully planned educational program.

Instructors, supervisors, heads of operating and delivery rooms were either just getting used to new jobs or just getting ready to leave old ones. Naturally ward teaching suffered.

In the second grading, Dr. Burgess reports, the typical nursing school faculty member has held her present position for 2.6 years. In the first grading the average tenure of faculty was 1.6 years.

The Grading Committee also finds a relationship between tenure of office and salary cuts. Many hospitals are giving relatively small cuts to the nurses who are retained on their staffs during depression times, but they are more drastically reducing the salaries offered nurses added to fill vacancies.

The economic depression is accomplishing to some extent what the Grading Committee recommended three years ago, i.e., that salary scales be adjusted so that there will be greater differences between positions with more opportunities for promotion from rank to rank and higher rewards for those who fill important and difficult positions.

NEW ENGLAND HEART ASSOCIATION

THE HEART IN HYPERTHYROIDISM*

BY LEWIS M. HURXTHAL, M.D.†

THAT the heart reacts profoundly to hyperthyroidism has long been known and accepted. The nature of the cause of this reaction is still a disputed point. Rather than present a discussion of all the evidence which has accumulated in favor of the several theories, I shall simply list what has been observed as the result of hyperthyroidism in its relation to the heart.

1. Increased rate and amplitude of the heartbeat and thus an increased cardiac output.
2. Auricular fibrillation and occasionally auricular flutter. (Occurs in about ten per cent of all cases.)
3. The systolic blood pressure is elevated and the diastolic pressure is lowered.
4. Underlying angina pectoris may be brought out or intensified.
5. Congestive heart failure may develop as follows:
   (a) With auricular fibrillation alone;
   (b) With auricular fibrillation and coincident cardiovascular disease;
   (c) With normal (regular) rhythm and coincident cardiovascular disease.
6. Dilatation of the pulmonary artery[1, 2] with or without obvious congestive heart failure is seen. (See Figure I.)

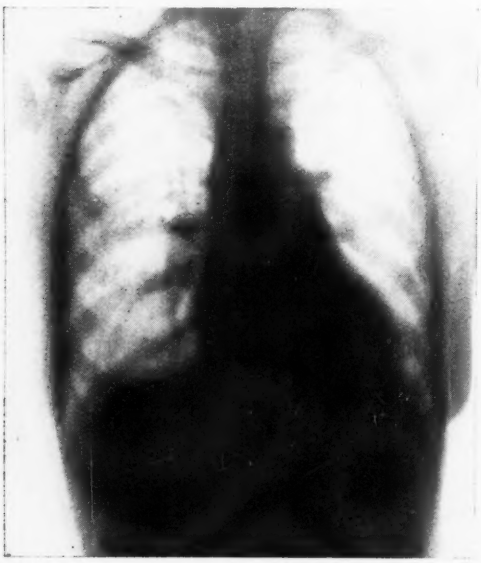

FIGURE I. Heart shadow and shape in Exophthalmic Goitre of approximately five years' or more duration. Female, aged 29. Tonsillitis once. No hypertension. B. M. R. +85. Note moderate left ventricular hypertrophy and prominence of pulmonary arc. The heart shadow was smaller in this case after operation although the shape remained the same. Case No. 14695.

*From the Department of Medicine of the Lahey Clinic, Boston.

Read before the Cardiac Course of the New England Heart Association, May 18, 1932.

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7. Dilatation of all cavities of the heart[2] is occasionally seen without evident heart failure but more commonly with it. (See Figures II and III.)

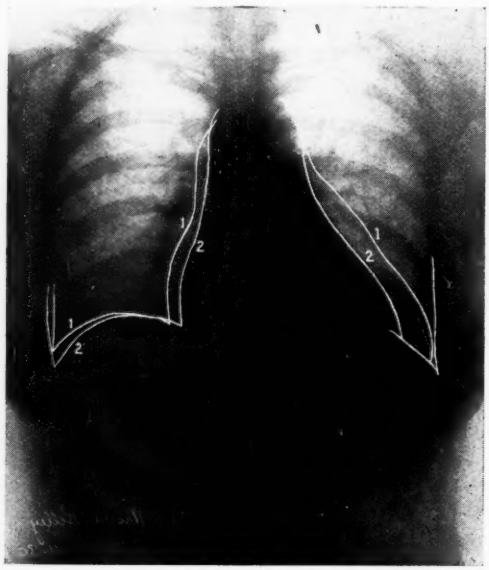

FIGURE II. Outline of heart shadows before and three months after operation. (Case No. 22785.) Female, aged 41, with exophthalmic goitre, auricular fibrillation, and congestive heart failure. B. M. R. +62 (1) on admission to hospital. (2) Three months later, regular rhythm, B. M. R. +1, weight 157. The patient lost 25 pounds on digitalis after a preliminary week of rest with Lugol's solution, during which time the patient gained 8 pounds and edema increased. Weight after operation 130 pounds.

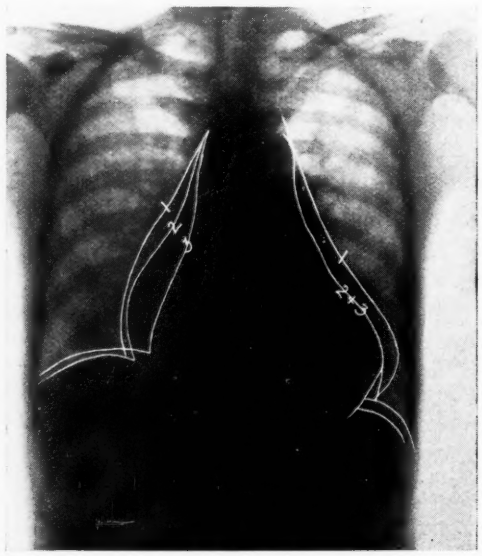

FIGURE III. Female, aged 38 ,with Exophthalmic Goitre of 7-8 years' duration. B. M. R. +69. Auricular fibrillation and congestive heart failure. (Case No. 7104.) Successive outlines of heart shadow and diaphragm superimposed on first seven-foot roentgenogram (1) original size taken on admission to hospital, (2) after clearance of congestive heart failure by rest, Lugol's solution and digitalis, (3) one year later when regular rhythm was present and the patient cured of hyperthyroidism.

8. No hypertrophy or slight to moderate degrees of hypertrophy of the ventricles may result. (See Figure I.)
9. The gross appearance of the electrocardiogram may be changed, giving rise to the so-called rolling waves, with exaggerated T waves in early stages and low complexes in the latter stages.
10. Thrombus formation with embolic manifestations may rarely occur in long-standing cases with auricular fibrillation.

In contrast to the above tabulation, effects which are probably not produced by hyperthyroidism are listed below:

1. It does not produce characteristic histological changes in the heart muscle.
2. When gross cardiac hypertrophy is found, coincident cardiovascular disease is present.
3. It does not cause hypertension, the mean blood pressure remaining unchanged[3]. (See Figure IV.)

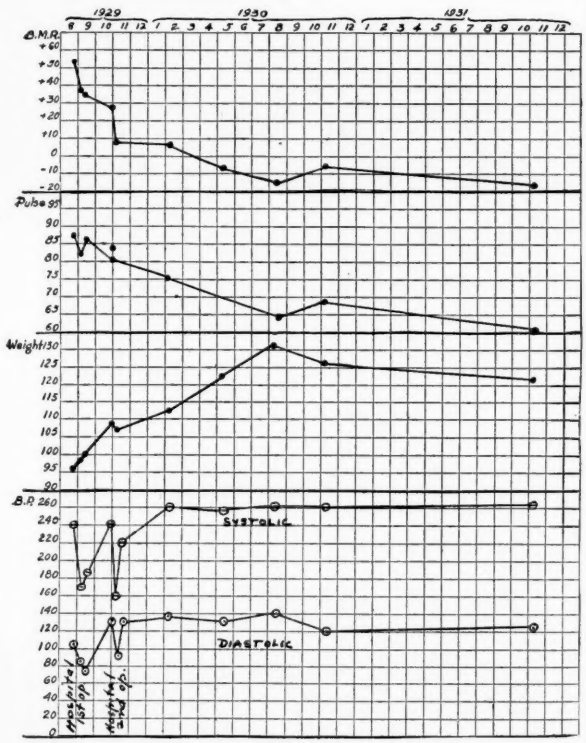

FIGURE IV. Exophthalmic Goitre and Hypertension. Observations over a period of two and one-half years. Note drop in Blood Pressure in hospital with rest in bed. Subtotal thyroidectomy carried out in two stages followed by normal B. M. R., normal pulse rate, and gain of 40 pounds in weight. The diastolic and systolic blood pressures averaged higher after operation when hyperthyroidism was completely relieved.

4. True angina pectoris is probably not the result of hyperthyroidism per se.
5. Apparently, arteriosclerosis is not produced or hastened by it.
6. With the exception of auricular fibrillation, auricular flutter, and possibly auricular premature beats, all other cardiac arhythmias are incidental.
7. Lesions of the conducting mechanism are not caused by hyperthyroidism.
8. Unless dilation is present, the murmurs associated with hyperthyroidism, when other disease is not present, are confined to the pulmonic area.

DIAGNOSIS

From the clinical point of view, the most important feature to be pointed out with regard to this question is the ease with which hyperthyroidism can be overlooked. In many cases of heart disease, hyperthyroidism may be the precipitating cause of symptoms or failure, and what is more important, it can be relieved. Time will not permit a discussion of the differential diagnosis of these cases, yet one clinical entity which demands emphasis is the patient with nontoxic nodular goitre and hypertension. This type of case requires careful study in order to conclude whether thyroid toxicity is present, for only if it is present can any benefit be expected from the circulatory point of view by subtotal thyroidectomy. In fact, great harm can be done by indiscriminate surgery in these cases.

Hyperthyroidism may be erroneously diagnosed in the young patient with a simple colloid goitre and irritable heart or neurocirculatory asthenia. The presence of a cold skin, along with anorexia and weight loss as the result of decreased food intake, the absence of menstrual change, eye signs, and a sensation of warmth, usually gives the necessary information for correct diagnosis. The basal metabolism may be elevated just as in the hypertensive case, so that repeated estimations of the metabolic rate are often necessary before a true basal reading can be obtained.

It might be well to repeat here what has so often been said before, i.e., the occurrence of paroxysmal auricular fibrillation or the presence of established auricular fibrillation should always lead one to suspect hyperthyroidism, regardless of the type of associated heart disease present.

PREOPERATIVE PREPARATION

This phase of the subject can be discussed under several headings:

I Regular Rhythm without Congestive Heart Failure. Little care is needed in regard to these cases. The usual preoperative preparation of Lugol's solution, fluids, and food suffices.

II Regular rhythm with Congestive Heart Failure. Bed rest, restricted fluids, and Lugol's solution usually bring about compensation in this rather rare clinical type. Diuretics are occasionally used; digitalis is rarely used.

III Auricular Fibrillation without Congestive Heart Failure. Although there is some disagreement as to the effects of digitalis in these cases, it seems to me that no harm can be done, and that circulatory efficiency can be increased if thorough digitalization is carried out pre-

operatively especially in cases where the ventricular rate averages over 110-120 per minute.

IV Auricular Fibrillation with Congestive Heart Failure. Here I believe digitalis is definitely indicated and its results have been satisfactory. It is true that digitalis will not always rid the patient of edema but when it is combined with Lugol's solution, it is unusual that diuretics are employed. The best diuretics in use today are theocin and salyrgan. We have seen heart failure in patients with auricular fibrillation increase when the patient was receiving Lugol's solution, to be completely cleared upon the administration of digitalis; on the other hand, we have seen edema partly cleared up by digitalis and then completely cleared on the further administration of Lugol's solution. (See Figures V, VI, VII.) Frequently, rest in bed

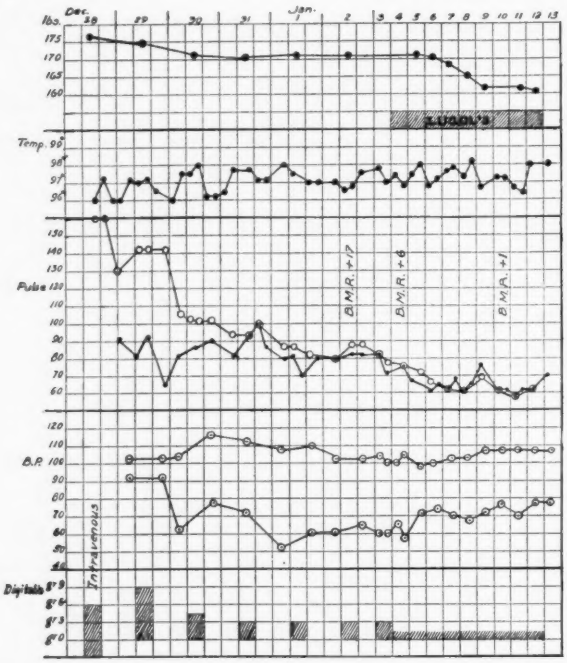

FIGURE V. Chart of patient, male, aged 42, with exophthalmic goitre and severe congestive heart failure. (Case No. 13461.) No pulse or blood pressure could be obtained on admission. Note drop in heart rate on digitalis and rest alone. Lugol's solution given on eighth day. Note sudden loss of 10 pounds of edema following its use. Metabolism not done on admission. Patient's pulse later became regular before operation and without quinidine. B. M. R. before operation +33. Patient now entirely well three years after operation. The patient's critical condition on admission was the result of heart failure rather than thyroid toxicity although the latter was the cause of the former. There was a marked reduction in the size of the heart shadow after heart failure and auricular fibrillation had ceased.

without any medication will accomplish the desired result. For the routine management, however, digitalis, Lugol's solution, morphia, and moderate restriction of fluid should be the agents employed. In some cases, diuretics may be needed and in severely toxic patients with heart failure, hypertonic glucose solution (25% to 50%) should be given intravenously. It acts as a diuretic and furnishes a fuel that is much needed in thyrotoxicosis.

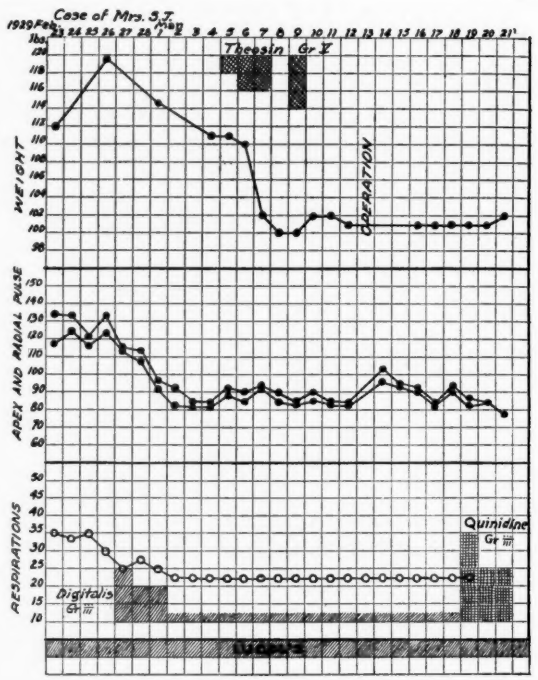

FIGURE VI. Chart showing results of bed rest, digitalis, theocin, and quinidine in a case of toxic adenomatous goitre with auricular fibrillation and congestive heart failure. Female, aged 55. B. M. R. +25. Note increase in edema on Lugol's solution and bed rest, then diuresis and slowing of pulse after digitalis (each square represents 3 grains digitalis leaf). Further diuresis after theocin (each square represents 5 grains p. o.). Pulse became regular on third day of quinidine therapy (each square represents 3 grains quinidine sulphate p. o.).

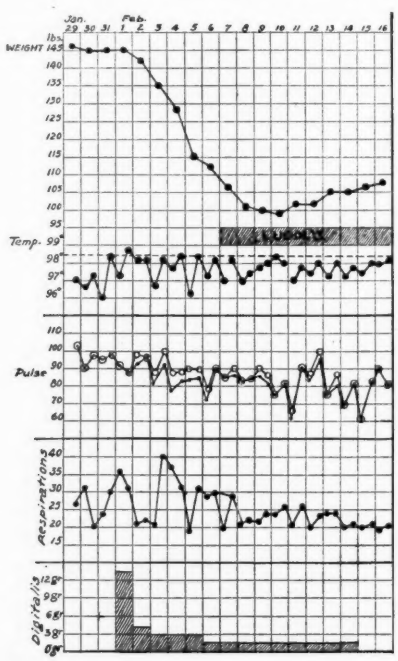

FIGURE VII. Clinical chart of a woman, aged 30, with toxic adenomatous goitre and rheumatic heart disease with mitral regurgitation and slight stenosis. Auricular fibrillation present. Note weight remained level with rest in bed alone. Digitalis given by mouth was followed by a diuresis of 35 pounds. Note continuation of diuresis when Lugol's solution was begun and then a gain of real weight amounting to eight pounds. The pulse rate in this case was not exceptionally fast. B. M. R. on admission +48. Patient was operated upon in two stages. Auricular fibrillation ceased, patient gained 37 pounds, and is well today. In this case, too, there was a reduction in the size of the heart shadow.

OPERATIVE RISK

The time and amount of surgery to be done on any one case cannot be put down in writing. Many factors, such as intensity and duration of the disease, amount of weight lost, age, and degree of heart failure, must be considered. It is always best to follow the most conservative advice and do too little rather than to do too much at one operation. The opinion of the surgeon, internist, and the impartial judgment of the anesthetist, both before and during the operation, is of great value in the final estimation of operative risk.

POSTOPERATIVE MANAGEMENT

The most frequent cardiac complication after operation is the development of paroxysmal auricular fibrillation. This need not be treated if it does not cause the patient discomfort or give rise to circulatory embarrassment. Rarely, orthopnea with great distress may ensue. In these cases prompt intravenous administration of therapeutic doses of digitalis will give relief in a few hours. Morphia should also be given quickly for immediate relief.

Because of the susceptibility of the thyrotoxic heart to anoxemia, oxygen should be used where there is the least evidence of cyanosis in the acutely ill patient.

About five to seven days after operation, quinidine can be used in cases with auricular fibrillation, either in the postoperative paroxysmal type if it has persisted that long, or in those cases with established auricular fibrillation. It is useless to use quinidine until all operative procedures have been performed. Any of the methods of administration can be used; we prefer to start out with three grains as a test dose and to repeat with six grains every two hours during the day until one of these things happens: (1) any unpleasant symptom arises; (2) not more than thirty-three grains have been given; (3) the pulse is regular. Repeated attempts may be necessary to accomplish the return to normal rhythm.

SUBSEQUENT CARE

Patients who have had congestive heart failure and have been subjected to a subtotal thyroidectomy require few restrictions. They soon find that all consciousness of palpitation or dyspnea has disappeared and that their hearts can take care of exertion as quickly as they feel able to resume it. However, when a hemithyroidectomy only has been done, activities should be limited during the period preceding the second operation, as a recurrence of congestive heart failure not infrequently occurs.

Some cases may require digitalis if auricular fibrillation has not ceased following operation and quinidine therapy. Follow-up observations should be made at regular intervals because of the possibility of recurrent or persistent toxicity precipitating failure, or the less likely complication of myxedema.

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HYPOTHYROID HEART DISEASE*

BY J. H. MEANS, M.D.†

I HAVE been asked to speak on hypothyroid heart disease. There really is no such thing, at least nothing that justifies such a definite clinical label. There are, however, certain points about the heart in myxedema that are of considerable importance.

Before coming to these it may be well to review briefly the known facts in the morbid physiology of myxedema. In the first place, as you all know, there is a marked reduction in the rate of general metabolism. Presumably in consequence of this, there is a parallel reduction in the minute volume of the blood flow[1], shown clinically by slow pulse and low pulse pressure. These actually are to be taken as the expression of a decrease in the discharge of blood per systole. It is of hemodynamic interest also that there is characteristically in myxedema a disturbance in the distribution of body water giving a decrease in plasma volume and an increase in tissue fluid[2]. There is increased storage of protein in both plasma and tissue (deposit protein)[3]. Finally there is practically always an appreciable degree of anemia. Since this means lowered oxygen transporting power it also is of interest from the point of view of the circulation.

The circulatory load upon the heart is clearly diminished in hypothyroidism. Nevertheless the heart suffers. Indolence is good for it no more than for the entire man. It becomes weak and flabby as do the skeletal muscles of the indolent. So much so that Zondek[4] in 1918 invented the term myxedema heart, a condition characterized, according to him, by generalized dilatation, sometimes very indolent action, low T wave in the electrocardiogram and restoration to normality under thyroid therapy.

*Read at the meeting of the New England Heart Association, May 18, 1932.

†Means — Jackson Professor of Clinical Medicine, Harvard Medical School. For record and address of author see "This Week's Issue," page 558.

In the United States, Fahr[5] has described gross congestive failure in several cases of myxedema not responding to digitalis but responding to thyroid, and we have had one in the Massachusetts General Hospital. While gross congestive failure is rare, the type of dilatation described by Zondek is common. In fact to some degree it is nearly always present, and really should be considered a part of the picture of myxedema rather than a complication.

In a series of 30 cases of myxedema at the Massachusetts General Hospital, Lerman and Clark[6] found but three which failed to show some shrinkage in size, as determined by x-ray, under therapy with thyroid. The maximum shrinkage in transverse diameter as a result of such treatment was 6.9 cm. Precautions were taken in this study to exclude patients with organic heart disease. Before a comparison of diameters was made, pictures were taken until the diaphragm was in the same position after as before treatment. The data of this study are to be published elsewhere, but it may be said now that in general the greater the dilatation of the heart in myxedema before treatment, the greater will be the shrinkage under treatment. It was found, too, that although the greater portion of the shrinkage occurs rapidly, say in a fortnight, a further slow shrinkage occurs for three or four months as thyroid is continued. In the cases in which the shrinkage was less than was to be expected, there was often an associated, and presumably independent, hypertension to account for it.

The changes in the electrocardiogram in myxedema are well known and need but little comment. In 23 of 24 of our cases there was flattening in the T wave in one or more leads. Eight showed low voltage. The low T wave is the characteristic finding of myxedema. Under thyroid the electrocardiogram returns to normal. That these changes are not a phenomenon simply of altered skin conductivity was proved for us by Dr. P. D. White, by the use of needle electrodes.

The question now comes up, what is all this about? What is going on in the heart in myxedema? Cardiac symptoms are not uncommon. For example in the Massachusetts General Hospital series, dyspnea occurred in 65 per cent, palpitation in 53 per cent and precordial pain in 29 per cent. Of the pathology, however, we are ignorant. There is very little autopsy material available. In the "Report on Myxedema"[7] published in London in 1888 there are protocols of 20 autopsies. In only three was there any change of a pathological nature noted in the heart. In two of these the picture was that of an interstitial myocarditis, and in the third, simple pigmentary excess in the muscle fibers. Four autopsies have been secured at the Massachusetts General Hospital. In these, three showed edema of the muscle fibers with fibrosis; a fourth showed interstitial edema.

Possible explanations of the cardiac enlargement are hypertrophy, pericardial effusion, edema, and dilatation. Because of the rapid shrinkage hypertrophy is unlikely (unless of course some independent cause for it like hypertension is present). By the same token dilatation seems likely. At least it is easy to believe that shrinkage could be due to the rapid improvement in tone under the action of thyroid. Pericardial effusion is possible but the x-ray appearance is against it. Some edema of the heart muscle may play a part. It was noted at autopsy in our cases, and it is easy to conceive of its rapid disappearance under thyroid. Something rather similar is seen in beriberi. The work of Reid and Kenway[8] may have some bearing on the problem. These writers showed that the electrocardiographic changes do not occur in persons with low metabolism but without myxedema. They are characteristic of true myxedema, not of low metabolic rate in general. It is fair to attribute them therefore to the pathologic state of the heart occurring in myxedema whether it may be edema, dilatation, or both, or something else.

In closing I should like to mention angina pectoris in myxedema. This is not a new but an important subject, particularly with reference to treatment. The coronaries of the flabby heart of the myxedema patient may be capacious enough for the low level of cardiac work which the body calls for during the myxedematous state but when the heart's work is increased and its tone improved under thyroid, its own metabolism increases and the coronaries may no longer be adequate. Angina may then ensue[9].

It is important therefore to watch all patients with myxedema during the inauguration of thyroid therapy. If any precordial discomfort ever appears, thyroid should be stopped for a few days and then resumed with a smaller dose. Sometimes the doctor has to steer between the Scylla of myxedema on the one hand and the Charybdis of angina on the other. He may be forced to carry his patient at a basal metabolic rate of minus 15 or minus 20 in order to achieve this result.

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DR. CHARLES H. LAWRENCE read a paper entitled "Endocrine Cardiovascular Relationships Exclusive of Thyroid Disease" which was followed by a discussion by Dr. Gerald Blake.

DISCUSSION

DR. GERALD BLAKE: Interest in thyrotoxicosis and its heart manifestations has accomplished two things. (1) It has stimulated early recognition of the disease with early diagnosis of the heart condition in the disease. This is well shown by the figures from the Mayo Clinic which show a steady drop in the duration of hyperthyroidism of cases admitted there from an average of thirty-three months in 1910 to about fifteen months in 1930. The experience of other clinics and individuals approximates this. The severity of the heart symptoms is proportionately less marked—compared to that of the earlier years. As a result, the opportunity of seeing the more seriously damaged hearts becomes less frequent and less to be expected.

(2) It has also modified and clarified our conception of the heart in thyrotoxicosis by showing that it is frequently the site of previous heart disease—rheumatic heart disease in ten to fifteen per cent of the cases in New England; that it is seldom markedly enlarged and seldom so large as it seems to be; that the fibrillation is more likely to be paroxysmal in type, and that the pulse pressure and blood pressure return to normal following treatment. This is in contrast to the earlier attitude of satisfaction that a diagnosis of thyrotoxic heart disease was sufficient to explain cases showing severe cardiac disability even when they were of only short duration or moderate toxicity. While at present we have no definite proof of the effect of thyroxin on the heart muscle, we may fairly assume increased metabolism of the myocardium itself. The recent work of Markowitz and Yater, of Rochester, where action of thyroxin on chick embryo heart fragments appeared to produce an increase in rate to the point of fibrillation and paralysis, while it needs substantiation, is to say the least suggestive of this. At present, however, there has not been uniformity in the results obtained from such experiments.

The heart in myxedema may be defined as a sluggish, understimulated heart, frequently affected by an unsuspected degree of arteriosclerosis, giving a fairly typical electrocardiographic tracing, but not a typical x-ray picture, and giving symptoms of myocardial weakness or angina on slight exertion, which symptoms are relieved by thyroxin rather than digitalis. Such hearts may be disconcerting in their anginal response to thyroxin so that the dosage must be started low and increased cautiously. Here again focusing the attention of the profession on this condition has resulted in earlier diagnosis, and the chance of seeing the myxedema heart described by Zondek and Fahr, in which dilatation of all the chambers is present, becomes very unlikely.

With regard to the heart conditions in other cases of glandular dysfunction, we are familiar with only the tachycardias seen in certain ovarian disorders, the myocardial weakness associated with the asthenia and cardiovascular collapse of Addison's disease, and the hypertrophy of the heart in acromegaly that Dr. Lawrence has described.

AN UNUSUAL TYPE OF GENERAL REACTION FOLLOWING TREATMENT FOR HAY FEVER

BY MALCOLM M. RESTALL, M.D.,* AND WALTER S. BURRAGE, M.D.*

THE so-called "general reaction" is an uncommon but by no means rare occurrence among allergic patients undergoing treatment with some substance to which they are specifically sensitive.

As a rule, the reaction makes itself evident within fifteen minutes to half an hour after treatment, and is characterized by the appearance of hay fever, asthma, urticaria, edema, or any combination of these. Under appropriate subcutaneous injections of adrenalin, the symptoms usually subside rapidly.

In the present instance, however, the character and intensity of the reaction are so unusual that the case is reported in detail.

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B. G., an eighteen year old schoolboy in apparent health, complained of seasonal hay fever of two years' duration. His symptoms began in mid-August and lasted until the first frost. During the height of the season, slight asthma appeared occasionally. Otherwise, his health was excellent. The family history was negative for allergy.

On June eleventh, he was tested by the scratch method to the common grasses and weeds, giving definite positive reactions to ragweed in dilutions from 1-100 to 1-5000. As his history and tests were consistent with a diagnosis of late ragweed hay fever, subcutaneous injections of ragweed pollen dilution were given in gradually increasing doses, first at weekly and then at four-day intervals. The earlier injections gave very small local reactions but, as the dilutions became more concentrated and the doses larger, slight soreness and redness of the arm were reported.

At 7:45 P. M. on September third, he was given his sixteenth dose, consisting of 0.20 cc. of a 1-100 dilution, and was asked to wait for half an hour

to make sure that there might be no unexpected reaction. He remained in the waiting room reading a paper until 8:10, when he was observed to be slumped over in his chair apparently sleeping, but was easily aroused and stated that he felt "awfully sleepy." His pulse at this time was 90 and of good quality, but he appeared rather pale instead of having the usual reddish tinge to his cheeks. At the site of the injection was a tense white swelling the size of a half dollar.

At 8:15, 12 minims of adrenalin were given. About 8:30, he complained of weakness, twitching and burning eyes, and a feeling in the nose simulating hay fever. He also complained of a headache and stated that he was very dizzy and that "things looked blurred." On attempting to walk into the office he fainted and had to be carried. At 8:40, his teeth began to chatter, his legs to quiver, and gradually he began to flex and extend his knees with increasing rapidity so that soon his whole body seemed to shake as if he were having a chill. His pulse at this time was 120, increasing to 140 at 8:55.

At 9:00 P. M., 6 minims of adrenalin were given. At 9:10, there was gurgling of gas in the abdomen, followed by acute pain in the right upper quadrant localized in the gall bladder area. The onset of the pain caused the patient to arch his body so that his knees and head nearly met. The seizures continued until 10:50, occurring at intervals of two to three minutes and lasting about thirty seconds. During them, the abdomen was tense and rigid, relaxing between attacks. Five or six times the pain was accompanied by flexion of the knees and an arching forward of the back, and backward of the head on the neck. At 10 P. M., his pulse was 140, the pupils became widely dilated, and, for the next half hour, his respiration was definitely Cheyne-Stokes in character. He complained of a very dry mouth and asked for something to drink.

At 10:45 he began to appear more normal. His headache was less severe, his forehead was covered with perspiration, and a flush, starting on his cheeks, extended down over his neck. At 10:50, the pain in the abdomen and twitching of the legs stopped. Blood pressure readings at 11, 11:30 and 11:55 were 120/40, 122/60, and 122/80 respectively. At 11:55, his pulse had fallen to 90, and he stated that the dizziness had practically gone and that he felt perfectly all right. At no time did he vomit. The reflexes of the legs, arms, abdomen and eyes remained unchanged throughout, and he was able at all times to answer questions in a perfectly rational manner. When questioned twelve hours later, the patient was unable to recall any of the symptoms except the fact that he was drowsy and believed that he had fallen asleep fifteen or twenty minutes after the injection was given.

We can only speculate as to the exact mechanism governing these symptoms. Urticaria and superficial edema are commonplace enough in "general reactions". A possible explanation, and perhaps a logical one in this instance, would include consideration of local edema or internal "hives" involving the central nervous system.

In regard to treatment, adrenalin administered subcutaneously is always the drug and method of choice in these cases, but it is our observation that the smaller doses of 4 to 8 minims, often repeated if necessary, are of more value and cause the patient less discomfort than do the larger ones that are recommended in many textbooks.

PHYSICIAN'S RESPONSIBILITY IN THE EXAMINATION OF CONTACT CASES OF TUBERCULOSIS

BY JOHN B. HAWES, 2ND, M.D.,* AND MOSES J. STONE, M.D.*

IN dealing with tuberculosis the physician's duty concerns not only the individual patient but also the other members of the family, and in fact, all those with whom the patient has come into intimate contact. This is an axiom the truth of which cannot be doubted for a minute and yet it is one which so far as the general practitioner is concerned is rarely applied. The official city and state clinics dealing with tuberculosis have for years recognized the importance of the contact case. Tuberculosis associations throughout the country are devoting their energies more and more to the child who has been exposed to tuberculosis, endeavoring by means of preventoria and summer camps, etc., to prevent him from becoming the consumptive of the next generation. The average physician when he finds an open case of tuberculosis, although he may inquire concerning the health of the other members of the family rarely actually insists on examining them or has them x-rayed or does a tuberculin test. In diseases such as typhoid and diphtheria the doctor as a matter of course insists, and in many cases, helped by an enlightened public opinion the family likewise insists, that each be examined, inoculated and in other ways safeguarded. In tuberculosis, although the medical profession recognizes perfectly well the great ease with which this disease is transmitted, especially to children, simply because striking symptoms are apt to be in abeyance and because it lacks the dramatic onset of typhoid, diphtheria and similar conditions, the doctor is only too apt to take it for granted that the appearance of robust good health necessarily means that the individual is in good condition.

Pope, A. S. (*J. A. M. A.* 97: 846 [Sept. 19] 1931,) in a study of a large number of children with a childhood type of tuberculous lesion has found that 55 per cent among the males and 53 per cent among the females have been at some time or other exposed to an open case of tuberculosis while among 30 children in whom active pulmonary tuberculosis developed while under

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observation the contact rate was 78 per cent in boys and 71 per cent in girls.

Zacks, D. (*New Eng. J. Med.* 204; 1037 [May 14] 1931) basing his findings on the work of the Massachusetts ten-year program in childhood tuberculosis, demonstrated a similar state of affairs showing that two out of every three children with tuberculous lesions of the adult type came from families in which there had been an open case of this disease.

As a result of their work in the state clinics of Massachusetts, Chadwick, H. D., and Zacks, D. (*J. A. M. A.* 89: 670 [Aug. 27] 1927) found that the percentage of those children who reacted positively to a tuberculin test was 48.5 per cent among contacts while in the same age group 5-15 years among the non-contacts the percentage was 26.2.

Opie, E. I., and McPhedran, F. M. (*Am. Rev. Tuberc.* 14: 347 [Oct.] 1926) show strikingly the progressive increase of latent tuberculous lesions in families with open tuberculosis from 11.1 per cent in children during the period from birth up to five years to 70.6 per cent in children from 15-20 years of age, whereas the corresponding figures in non-contact families range from zero to 33.3 per cent.

The following table prepared by Jessamine S. Whitney for the National Tuberculosis Association is striking in this regard:

TUBERCULIN REACTION IN RELATION TO AGE AND CONTACT WITH TUBERCULOSIS

(Philadelphia)

Years	Children of families in contact with tuberculosis (tubercle bacilli in sputum)		Children of families with no known contact with tuberculosis	
	Positive	Number examined	Positive	Number examined
	Per cent		Per cent	
0-5	80	15	23.3	9
5-10	80.4	92	35.5	45
10-15	91.1	101	46.2	67
15-20	90.5	21	62	29
20+	100	43	100	29

There is no need of discussing this subject at any great length, but surely it is evident that if city and state clinics insist upon the examination of contacts and recognize in the contact case the future consumptive, the same should hold true in private practice. A few cases taken from our records will suffice to emphasize this point.

J. B., a man of 30 years was first seen on October 26, 1931, and a diagnosis of active tuberculosis was made. The family history revealed that a brother and sister, aged 15 and 18 respectively, had died of this disease. Examination of the entire family was then advised as a matter of routine. His two brothers and two sisters were examined. They appeared to be perfectly healthy and had no complaints. His older brother who had been working continuously was found to have pulmonary tuberculosis, involving both apices, along with evidence of an old healed childhood type of infection. The next brother, aged 14, was found to have a definite childhood type of disease. His two sisters, aged 19 and 24, were likewise found to have a childhood type of tuberculous infection.

M. G. another patient, a man of 45 years, was first seen October 15, 1929 and was diagnosed as having a quiescent pulmonary tuberculosis. A year later his son, aged 18, became ill with active tuberculous disease. His other child, a young girl of 15, still attending school, was likewise found to have pulmonary tuberculosis.

In another case, where the mother died of pulmonary tuberculosis, the father brought in his seven children ranging from 11 to 21 years to be examined. All seven were found to have positive tuberculin reactions and positive x-ray findings showing the childhood type of the disease.

These histories might be endlessly multiplied.

Myers, J. A. (*Minnesota Med.* 13: 74 [Feb.] 1930) says that the private physician who has a case of tuberculosis, such as a father or mother, in a home is not discharging his full duty to the family when he treats that patient alone With this we are in entire accord. Over and over again, tuberculosis has been shown to be a family disease. When an open case exists in the family, the infection will spread to from 60 to 80 per cent of the other members of the family and in some cases as many as 100 per cent of the members will become infected. We believe, therefore, that it is the physician's very urgent duty to apply tuberculin tests to children and when possible to examine clinically and by x-ray every member in the family who reacts positively. Only in this way will tuberculosis in its early and curable stage be detected and its development later on into well-marked and often incurable consumption be prevented.

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 19101

ONE YEAR'S EPIGASTRIC PAIN

MEDICAL DEPARTMENT

An English widow sixty-four years old was referred from the Outpatient Department. The chief complaint was abdominal pain of one year's duration.

Fourteen years before entry she had her left kidney with a six pound tumor removed for dull pain in the left flank of eight years' duration. She had not menstruated since that time. Five years before admission she had influenza and pneumonia. Since that time she had not been in her normal health. A year before entry she had pneumonia and pleurisy. After her convalescence she had once or twice a month attacks of shooting, stabbing midepigastric pain radiating to the intrascapular region and lasting fifteen minutes. Food seemed to relieve the pain. For the same period she had also frequently been nauseated after meals, especially by spicy food. For three months she had had frequency and had urinated three or four times at night. Ten weeks before admission she began to have dull pain in the lower back, unlike the other pain. At a Graham test in the Outpatient Department twelve days before admission the gall bladder was visualized after the administration of the dye. It projected as a rounded dense globule 2.5 centimeters in diameter. The shadow disappeared after a fatty meal. The function of the gall bladder was apparently normal. No stones were seen. A week before admission she began to have severe shooting pain down the anterior aspects of both legs, worse in the left. During the night before entry she had a sweat.

X-ray examination in the Outpatient Department on the day of admission showed the upper portions of the left tibia and fibula abnormal in shape and structure. There was lateral bowing. The trabeculations were coarse and had a dense hazy appearance. There was also some thickening of the bones. The right tibia and fibula appeared normal. There were advanced proliferative changes about the bodies of the lumbar vertebrae characteristic of hypertrophic arthritis. The bones of the lumbar spine and pelvis showed changes similar to those seen in the left tibia and fibula, although less marked. The right kidney was well visualized, normal in size, shape and position. The left kidney was not visualized. There were no shadows suggesting stones and no unusual shadows within the abdomen.

The family history is not significant.

She had always had nervous instability. Before she was twenty she had a nervous breakdown following her father's death. She had many sore throats and colds in her youth. She had had occasional attacks of dizziness during the past year. For a while during the previous summer she had dyspnea.

Physical examination showed a woman with dry sagging skin, somewhat pale and pasty. The back was evenly curved and moderately rigid. The heart was at the upper limits of normal size. The sounds and action were normal. There was a soft apical systolic murmur. The blood pressure was 175/115. The lungs were clear. The abdomen was obese. There was tenderness in the suprapubic region and in the costovertebral angle over the left nephrectomy scar. Both tibiae were bowed anteriorly, the left more than the right. On pelvic examination no cervix or uterus was made out. The finger joints showed hypertrophic changes.

The amount of urine was 40 to 80 ounces when recorded. The specific gravity was 1.006 to 1.022. There was the slightest possible trace to a slight trace of albumin at eight of nine examinations, sugar at the first. The sediment showed one to 20 leukocytes per field at all examinations. (No catheter specimen is mentioned.) There were red cells at three of eight examinations, hyalin casts at one, granular at five. Blood examination showed 11,900 to 24,400 white cells, 83 to 66 per cent polynuclears, hemoglobin 70 per cent, reds 4,540,000 to 4,680,000. There was questionable decrease in the number of platelets in the first smear, a normal number in two later. In a third there was slight achromia and variation in size and shape of the reds. The stools were normal. The basal metabolic rate was —5. The van den Bergh at entrance was 2.0 to 2.5 milligrams, direct reaction. Four days later it was 3.07 and two days after that 1.0 to 1.5. The icteric index was constant at 10 for the first nine days. Two Hinton tests were negative. A renal function test showed 12 per cent excretion of the dye in fifteen minutes, 8 in 30 minutes. The serum protein was 5.6 per cent. Liver function tests showed 90 per cent retention on the ninth day, 70 per cent on the seventeenth day. Gastric analysis gave white turbid watery material, free acid 22 in the fasting contents, 50 at half an hour and 72 at an hour, combined acid 19 in the fasting contents, 8 at half an hour and 13 at an hour. The nonprotein nitrogen was 35 milligrams.

X-ray examination showed the changes previously noted in the left tibia and pelvis, and also in the left humerus and radius. There was

calcification in the arch of the aorta and in the blood vessels of the pelvis. There was evidence of an old bilateral pleurisy. A second Graham test confirmed the previous findings. Reëxamination two days later confirmed the previous findings. A third Graham test was negative. The skull showed an area of calcification in the frontal region. Reëxamination showed calcification in the falx, in the pineal and in the choroid plexus. There was no definite evidence of increased intracranial pressure. A gastro-intestinal series showed no evidence of organic disease of the esophagus, stomach or duodenum. The sigmoid was spastic and showed a sawtooth edged deformity. On reëxamination no diverticula were seen and no definite evidence of organic disease of the large bowel. Examination of the teeth showed multiple pus pockets.

The temperature was 97.4° to 102.7°, the pulse 80 to 130. The respirations were 18 to 34.

No explanation was found for the fever or the abdominal symptoms. On the sixteenth day she had an attack of right upper quadrant pain. The following day the liver function test showed 70 per cent retention, the van den Bergh was 3.60 and the icteric index 30. On the twenty-fourth day, although the temperature had been subsiding, the patient complained of more pain in the right upper quadrant, worse with breathing. No rub was heard over the liver and its edge was not felt. There was dullness in the right chest to the angle of the scapula with many coarse and medium crepitant râles and distant bronchial breathing. Tactile fremitus was increased just within the scapula and diminished below this point. There was no egophony or increase of whisper. Two days later tactile fremitus was increased at the right base. The temperature and respirations were coming down and the patient felt a little better. X-ray examination showed the right side of the diaphragm unusually high and sharp in outline. The lung fields were essentially clear. There was no enlargement of the heart or narrowing of the intercostal spaces. Neither diaphragm moved with respiration.

The patient continued to become less well oriented and more listless and jaundiced. She had much tenderness over her liver and complained of right upper abdominal pain. On the thirty-first day the icteric index was 50, the van den Bergh 9.82. Five days after the last x-ray another examination showed considerable change in the right lung. The entire right base showed dullness obscuring the diaphragm and the costophrenic angle. The right interlobar septum was well visualized. The upper half of the right lung was less radiant than normal. The aortic knob showed calcification. The heart shadow, trachea and mediastinum were not displaced. The entire right axillary border up to the apex was less radiant than normal. The dull area at the right base had a straight upper edge. It could represent consolidation, but the thickened pleura along the axillary border and the mediastinal border of the consolidated area were much more suggestive of fluid with a high diaphragm.

On the thirty-third day a chest tap in the seventh interspace in the posterior axillary line gave 75 cubic centimeters of slightly turbid orange fluid, specific gravity 1.012, 200 white blood cells, 65 per cent polynuclears, 12 per cent lymphocytes, 23 per cent large mononuclears, 11,200 red cells. A culture was sterile.

The patient became more apathetic. A surgical consultant was unable to make a diagnosis but thought that whatever process was present was now so near its end that surgery offered nothing. On the thirty-fifth night she had several attacks of dyspnea. On the thirty-seventh day another tap was done in the same region as before. The patient began to cough and to have dyspnea towards the end of the tap, so the needle was removed. 700 cubic centimeters of slightly turbid amber fluid was withdrawn, specific gravity 1.013, 9,600 red cells, 230 white cells, 28 per cent polynuclears, 60 per cent lymphocytes, 12 per cent mononuclears. On culture diphtheroids were found in two out of four tubes.

The patient slowly but steadily declined and on the fortieth day died.

Clinical Discussion

Dr. Richard C. Cabot: One speculates a little as to what kind of tumor of the left kidney could weigh six pounds. I do not think of anything except hypernephroma. A tuberculous kidney would not weigh that. They would not take out a cystic kidney. They would know that there would be one on the other side, and that they would be no better off. Amyloid kidneys do not weigh much. They would not call it a kidney if it were a pyonephrosis or a hydronephrosis. So far I think we have to say hypernephroma. On the basis of a six-pound tumor fourteen years before admission I do not see what else we can say. I have known hypernephromata removed with no recurrence for as long as this.

"She had not menstruated since that time." This makes us wonder whether it was the kidney they took out or something else. She was fifty years old, or at about the age when she should have stopped, so I think we do not need to transpose the organs.

Ordinarily people do not talk in that vague way about the pains that are relieved by food. It does or it does not relieve, and if it does it does totally; so my guess is that this is not the kind of pain that we think of as relieved by food, not the pain of hyperacidity, pyloric spasm or ulcer. "She had frequently been nauseated

after meals," as she would not be ordinarily with the peptic ulcer syndrome.

I do not know what that pain in the lower back was. It might have been gall stone pain. If it was not that I do not know what it was. X-ray shows a functioning gall bladder. That does not exclude gall stones. They may perfectly well be there. It merely means that the gall bladder itself is functioning. Two and a half centimeters I should say is almost exactly the diameter of the normal gall bladder.

"The shadow disappeared after a fatty meal." What does that mean?

DR. MAURICE FREMONT-SMITH: It means that the gall bladder functioned normally.

DR. CABOT: Twenty-five per cent of gall stones are visualized by x-ray, seventy-five per cent are not.

"A week before admission she began to have severe shooting pain down the anterior aspects of both legs." We cannot get that from gall bladder disease. We get a great many queer kinds of pain from the gall bladder and even the one we have been talking about might be from the gall bladder, but we cannot get pain in the legs. In general, pains in both legs in a person of sixty-four make one very anxious. Pains in one leg may be due to sacroiliac or to sciatica. But pains in both legs are generally from pelvic tumor so situated as to press on a great many nerves. So we are always alarmed, especially in an elderly person, by pains in both legs.

The bony changes shown by x-ray are all on the left, and the pains have been bilateral.

Hypertrophic arthritis, as you know, is the change of age. I take it they think these bony changes are of no importance whatever.

I do not think any human being could do more than make some wild guesses if asked to make a diagnosis on what I have read so far. I should not venture to take your time on the basis of what we have. Physical examination must clear it up if it is cleared up at all.

Of course these bony changes are not in any way characteristic of bony metastases. Metastatic malignant tumor is what we are thinking of. I believe an x-ray man would say that this is not characteristic in any way. Those are chronic proliferative changes which have nothing to do with tumor. They do not sound to me any more like Paget's disease or any of the prime bone diseases. I believe, as here suggested, that they are the changes of age and have nothing to do with the pathology of this case.

I take it the back was forward curved. At sixty-four that is what we expect.

"No cervix or uterus was made out," which again brings up the question of what she was operated upon for some time before. Sometimes, of course, we do not have very good luck in pelvic examination, but we should have made out a uterus.

DR. FREMONT-SMITH: There was no abdominal scar. They could not have taken it out.

DR. CABOT: They could have got it out through the vagina. It seems as if they would have mentioned a little thing like that. They took out the uterus for good measure when they took out the kidney, apparently.

We are no nearer the diagnosis yet. She has a hypertension, but that is not what she came here for. That is only a by-product. There is good power of concentration in the kidney. It is not stated that the urine is a catheter specimen, therefore the sediment is of no importance. Moreover at sixty-four almost anybody has as many casts as that in the urine.

There is nothing notable about the blood,—a slight leukocytosis.

The basal metabolism was normal; —5 means nothing.

"Icteric index 10" is not enough abnormal to be of any importance.

A liver function of 90 per cent retention is a very serious matter and generally means an extensive liver disease.

There is nothing distinctive about the gastric examination. The non-protein nitrogen is within normal limits.

What have we so far? We have, I should say, a bad liver function and that is all.

Another x-ray report records the bony changes, why left-sided I have not the slightest idea. One does not expect left-sided changes in hypertrophic arthritis, but I cannot see what it could have to do with the kidney. "There was evidence of an old bilateral pleurisy." If we were dealing with questions of tuberculosis that last might be of importance. As it is, I do not see that it is. The gall bladder was functioning normally. "Calcification in the frontal region," so far as I know, is not evidence of anything in particular. The deformity of the sigmoid might be diverticulitis. Examination of the teeth showed what it would in anybody of that age. We still have nothing but that liver retention.

During the first five days the temperature was a little elevated. The pulse was pretty low. The later chart shows more. That would suggest infection somewhere, I do not know where.

On the seventeenth day the icteric index was 30. Now she was getting a definite jaundice, a thing which we have not been able to say before.

"There was dullness in the right chest to the angle of the scapula, with many coarse and medium crepitant râles and distant bronchial breathing," all of which might be nothing more than a big liver. I do not believe there is anything going on in the lung. If there is I do not believe we have signs of it. The diaphragm was high and sharp in outline, as it would be if there was a big liver, as I fully believe there is. All the pathology we have so far points to the liver.

"Neither diaphragm moved with respira-

tion." That means pressure from below, from a big liver, perhaps a big spleen too, and that is all that I can see. There is nothing in the chest above that would stop the diaphragm from moving. One gets that fixed diaphragm especially in subdiaphragmatic abscess. With a temperature like this we cannot possibly rule out subdiaphragmatic abscess. It is one of the things to be considered when we come to differential diagnosis.

"The right interlobar septum was well visualized," which ordinarily means some thickening or inflammatory process in that section.

There is fluid at the right base; that is what I believe.

Seventy-five cubic centimeters is nothing. It is not worth while to tap for that. It means that they were mistaken or that they did not tap in the right place. 65 per cent polynuclears is the beginning, of course, of pus, but if there is blood in it it would not mean much. It is about the percentage of normal blood. I should say it meant merely normal blood, and had no significance. At the second tap there are still a lot of reds, not so many as before, but fewer polynuclears.

Our question, as I see it, is between an inflammatory process and a neoplasm of the liver. We have no reason to suppose this is cirrhosis or syphilis. We have some evidence that it may be gall stones. She has had pain in that region; she has had jaundice; she has not, on the whole, had any characteristic gall stone pain. But I do not see how gall stones and their effects in cholangitis and liver inflammation can be ruled out. Then a subdiaphragmatic abscess is also to be considered, and malignant disease is to be considered. I think I shall ask Dr. Holmes to go over the plates before I settle down to the best diagnosis I can make. We had a lot of bony changes which I have been saying mean nothing. I want to see if I am right about that.

DR. GEORGE W. HOLMES: Apparently the gall bladder was of some interest. Here is a series of plates taken of it. The first two films were taken after giving the dye and before eating, and the second two were taken after eating. Here we see, in the film before eating, a shadow which might very well be the gall bladder. It is not the usual shape but more round, and probably represents an unusual view of the gall bladder rather than any definite deformity of the gall bladder. After the patient had been allowed to take food the gall bladder shadow disappeared, which is the normal thing for it to do. There were no shadows, either after the dye had left the gall bladder or while the dye was in it, which would lead to a diagnosis of gall stones.

The kidney shows well, as it often does after the dye. Part of the dye I think is secreted by the kidney. That is a normal shadow of the right kidney.

The edge of the liver is easily seen; it is also better visualized because of increased density. So far as one is able to say from x-ray examination the liver is not enlarged. In fact it is high if anything. We would interpret the findings so far as negative.

There are some things of interest in the skull and bones. This film shows an area of calcification in the region of the falx. A lateral view confirms this finding. So far as I know, such findings are of no clinical importance. They occur quite frequently in older people and I should think have no bearing on the case.

DR. CABOT: I have always said that the most important thing we can learn from x-ray men is what they say is "nothing". This falx thing, you see, is important in that connection.

DR. HOLMES: I hope Dr. Mallory will not find that it is important. Once in a while we call something nothing.

In the spine we see these large bony ridges between the bodies of the vertebrae, which are usually interpreted as hypertrophic arthritis but which probably are one of the changes which come with age and arteriosclerosis, although this is rather more than we usually see.

This film was taken for the urinary tract, and again shows a rather prominent right kidney. This right kidney was probably doing all the work.

DR. TRACY B. MALLORY: The left kidney had been removed.

DR. HOLMES: That explains the increase in size and density of the right kidney.

I noticed on reading through the notes hurriedly a statement that the bones had a hazy appearance. I do not see anything in the films so far which would lead me to think they were anything more than the bones of a person in middle life.

The films of the chest were taken on November 2, November 26, and December 2. In the first film the heart shadow is a little prominent, downward and to the left, but might be within normal limits. There is nothing unusual in the appearance of the diaphragm or of the lung fields. In the next film the diaphragm is slightly higher. The left border of the heart is more noticeable and we have a calcified plaque in the aortic arch, seen also in the previous film. In the last film there is dullness throughout the lower part of the chest which rises higher in the left axillary border than in the median line. It is quite dense, obliterating the outline of the diaphragm, and has the same appearance as fluid in the pleural space.

DR. FREMONT-SMITH: Had not that process started in the first film? Is there not more marking in the right base than there should be, or is it simply that it is taken from the back?

DR. HOLMES: Perhaps, knowing what happened later, we could interpret it in that way. Of course this film is taken with the patient ly-

ing on his back at a rather close distance, and all the shadows are magnified considerably. I do think that perhaps the costophrenic sinus is rather shallow.

DR. FREMONT-SMITH: I was thinking of the other one. That whole right side is less clear than the left.

DR. HOLMES: I think that is due to rotation.

DR. CABOT: How does rotation do that?

DR. HOLMES: I don't know, unless there is air between the chest wall and the film, and the appearance is due to secondary radiation from the air. Of course it may not be that. In this case there is a little suggestion that the left lung is more brilliant than the right. I think there is some variation in normal people in different parts of the chest, and that brilliant appearance may not mean anything. On the other hand, if one is sure that a certain portion of the lung is more brilliant than other portions, one should consider a ballbearing blocking of the bronchus such as we get with carcinoma or a foreign body. I do not think we are likely to have local emphysema giving this appearance. It would be more likely to involve a whole lung or both lungs. I should be inclined to interpret this brilliancy you speak of as being of no clinical importance.

Then we have the gastro-intestinal tract, which is essentially negative, and as I have pointed out, we have to rely almost entirely on the fluoroscopic examination. We have the film as a permanent record, but the man who made the note is much more likely to be right than my interpretation from the films alone. There is certainly nothing in the film to suggest anything abnormal.

DR. CABOT: The chief thing about which I want help from you or anybody else is in the differential diagnosis between a metastatic neoplasm of the liver and inflammatory change in the liver. In one of the records the diaphragm is spoken of as being fixed. How much weight may I put on that?

DR. HOLMES: Fixation of the diaphragm usually means inflammation either directly above it or directly below it. If the patient was developing pleurisy and had pain that was aggravated by breathing, she might easily hold the diaphragm fixed from that alone. As a point of differentiation between carcinoma of the liver and inflammatory change, I do not know of how much value it is. I should say very little, because I think you might get a fixed diaphragm in either case. There is some evidence here against the diagnosis of carcinoma of the liver, and that is the size of the liver. It is not enlarged. But the x-ray is notoriously inaccurate in determining the size of the liver.

DR. CABOT: The diaphragm was fixed on both sides. That worries me. Does it get fixed on one side from sympathy with trouble on the other?

DR. HOLMES: No. I wonder if the observation was correct.

DR. CABOT: If we had not had that record of the kidney being taken out fourteen years ago I do not think we should be thinking of malignant disease now. A hypernephroma does not ordinarily metastasize chiefly in the liver, especially after so long a period. We have no evidence of local bony metastasis. The fever could be explained by neoplasm of the liver, which ordinarily does give fever, though ordinarily not so much of an up-and-down fever as this. On the other side what have we? We have fever and jaundice, and fluid forming above the liver in the right chest,—apparently an inflammatory fluid. It seems to me that inflammation has it over neoplasm.

If we are to say inflammation we have to be more specific. Do we mean inflammation inside or outside the liver or both? A diagnosis of subdiaphragmatic abscess I do not think one has the right to make unless one can think of a cause. The cause is usually either perforative gastric ulcer or a gall stone. I do not think we have good evidence of those, although we have some history which might go with gall stone. We have no history suggesting perforation of the gall bladder, which would have to be supposed. The pain would go perfectly well with abscess. On the other hand, in most cases of abscess we get evidence of a cause for it which is not suggested here. Why should it not be cholangitis following up from a gall bladder? The gall bladder is functioning. Does that mean she cannot have cholecystitis?

DR. HOLMES: I should think so, if our observations are all correct. You can have stones and a negative Graham test, but I should say not a well developed inflammatory process.

DR. CABOT: What I am looking for is an inflammation spreading up into the liver and producing cholangitis, and I should say Dr. Holmes' evidence is against that. So I am in a quandary. For there is no good evidence either for a subdiaphragmatic abscess or for a cholangitis, and yet on the whole it seems to me more like an inflammatory process in the liver than it does like a neoplasm.

DR. FREMONT-SMITH: Those pains in the legs would not be explained either by an inflammatory process in the liver.

DR. CABOT: We have heard very little about those since she came to the hospital, and I don't see how we can put stress on them. They would be due to massive pelvic metastases.

DR. FREMONT-SMITH: Or perhaps metastasis into the spine. If she had that do you think we should have to have x-ray evidence of a hypernephroma?

DR. HOLMES: I think you would, with hypernephroma. You can have spinal metastasis from

the breast without its showing in the x-ray. I wonder if the arthritis she had could have caused the pain in the legs.

DR. CABOT: I cannot make anything of those leg pains. I am going to throw them out.

A STUDENT: Do you think that the anterior bowing and the changes in the bones of the legs, etc., suggest Paget's disease?

DR. CABOT: No, I do not.

DR. HOLMES: These films do not show any evidence of Paget's disease, and Paget's disease that would cause bowing of the legs would certainly show in the x-ray. I should think this bowing could be due to changes in childhood, —rickets.

A STUDENT: What about cancer of the head of the pancreas?

DR. CABOT: Perhaps I ought to have thought of that more. One generally gets a deeper jaundice. This is a jaundice, but not intense. Nothing is said about the stools.

A STUDENT: She had diabetes.

DR. CABOT: She had sugar once. That is not much of a diabetes, is it? Is there any note about the stools? We certainly ought to get something there if it is cancer of the pancreas. Carcinoma of the head of the pancreas, which is the only thing I know how to diagnose, ought to change the stools.

MISS PAINTER: They were brown, guaiac negative. There is no record of the fats.

A STUDENT: Wouldn't the gall bladder fail to empty in carcinoma of the head of the pancreas?

DR. CABOT: Yes, that is a good point. Unless it is in such a position that it did not press. All the evidence we have in pancreatic cancer is from pressure on the common duct. We ought to have a bigger gall bladder too.

DR. HOLMES: I looked up the cases of cancer of the pancreas with that thing in mind. As a matter of fact, most of the cases of carcinoma of the pancreas are not diagnosed until autopsy, and practically all of them show a positive Graham test.

DR. CABOT: That is, the gall bladder is not visualized. It was visualized here. I think I am right to throw out cancer of the pancreas.

Are there other things we ought to have been considering and have not? I have limited myself to neoplasm and inflammatory changes in the liver. I do not know what else to consider. Has any one any suggestion of a different liver pathology that we ought to be considering?

Then I think I cannot say anything more than inflammatory disease in the liver, source unknown, but set down as excluding neoplasm. If that was so, the surgeon ought to have gone into it, I should think. He must have felt that the diagnosis was so obscure that he was not willing to go further.

A STUDENT: Do you regard that as an extension of the process to the pleura?

DR. CABOT: Yes, I think the pleural exudate was an extension of what we had in the liver. What we had in the liver I do not know. I am using a vague term because my knowledge is vague, and calling it an inflammatory process. One of the things that bothers me is the way the patient died. I do not see why she died so soon. She does not strike me as a person worn out by long sepsis. Yet we have nothing but a long sepsis to account for death.

May we hear the hospital diagnosis?

DR. MALLORY: Biliary cirrhosis, questionable liver abscess, probable Paget's disease.

DR. CABOT: I am against Paget's disease on Dr. Holmes' discussion and against the biliary cirrhosis just because it is rare.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Paget's disease.
Biliary cirrhosis.
Liver abscess?

DR. RICHARD C. CABOT'S DIAGNOSES

Inflammation in or near the liver.
Hypertension.

ANATOMIC DIAGNOSES

Operation wound, healed, nephrectomy.
Absent left kidney.
Carcinoma involving the left adrenal and retroperitoneal glands with metastases in the peritoneum, the liver, the spleen, the heart, the parietal pleura and the bone marrow.
Pleuritis with effusion, right.
Acute fibrinous pericarditis with slight effusion.

PATHOLOGIC DISCUSSION

DR. MALLORY: We found in this patient carcinoma in a large number of places, the most obvious points of involvement being the liver, both adrenals and all the various serous cavities. That is there was carcinomatous pleuritis, pericarditis and peritonitis. One rather unusual site of tumor was in the right auricle at a point where it to some extent obstructed the orifice of the inferior vena cava. It seemed quite uncertain at the time of autopsy whether this represented a recurrence of the old renal tumor of fourteen years ago or whether it was a fresh primary carcinoma. Following the histologic examination I think there is still some doubt. One single tumor out of the lot, that in the auricle of the heart, showed a very well differentiated adenocarcinoma with numerous papillary projections into the glands. It was not at all like a hypernephroma with the characteristic great vacuolated cells, but a papillary adeno-

carcinoma, which is a fairly frequent and fairly characteristic form of renal tumor, although of course it can arise in other places, like the thyroid and the ovary. We succeeded in ruling those out, and I feel almost certain that this metastasis in the auricle is a secondary deposit from the original renal tumor of fourteen years ago. That tumor was growing very slowly and was sharply circumscribed. All the other tumor masses of the body consisted of totally different cells, very rapidly growing, basophilic, with only the very slightest tendency to alveolar arrangement, and did not look in the least typical of a renal tumor. They were so totally undifferentiated that I could not possibly rule out that source. But a tumor of any sort when it begins to grow fast returns to the embryonic, totally undifferentiated character, when we can no longer give it a name. It may be that within the last six months or a year from some focus this tumor began to grow rapidly everywhere. It is also possible that a new tumor developed, and where its primary source was I am unable to say. It may have been in any one of the organs in which we found tumor nodules.

DR. CABOT: How big was the liver?

DR. MALLORY: It weighed 1700 grams, very slightly above normal size. She was quite obese and there was a good deal of fat in the liver.

DR. CABOT: That is rather small. You are surprised to find a liver anywhere near normal in size with cancer in it.

DR. MALLORY: Yes. Practically all the nodules were almost miliary in size; there were no large nodules at all.

DR. HOLMES: Was there anything in the gall bladder?

DR. MALLORY: The gall bladder was negative. The bone marrow from the second to the fifth lumbar vertebrae was filled with carcinoma.

A STUDENT: How about the lungs?

DR. MALLORY: The lungs showed a diffuse infiltration in the subpleural and interlobular lymphatics of microscopic nodules—no gross nodules—due to the carcinoma without question.

A STUDENT: Was that pleural effusion due to carcinoma?

DR. MALLORY: It was due to carcinoma without question.

A STUDENT: Was the number of red cells significant?

DR. MALLORY: Very possibly. It is the usual thing for a pleural effusion in carcinoma to be bloody, but it is not necessarily so.

A STUDENT: Were the tibiae examined?

DR. MALLORY: No. We took out a piece of the ilium and we did not find anything that suggested Paget's disease, although I do not think it was enough to rule it out.

DR. HOLMES: Did you examine the head?

DR. MALLORY: No.

A STUDENT: Did the left adrenal weigh more than the right?

DR. MALLORY: I do not think we weighed them. We do not usually weigh them. They were both almost completely replaced by tumor.

A STUDENT: I was wondering whether they took out the left adrenal when they took out the left kidney.

DR. MALLORY: The left was larger in appearance than the right, but they both contained tumor.

DR. CABOT: I think my diagnosis was about as wrong as it could be. I see one point now on which I think I might have laid more stress, that is the 90 per cent retention at the time when there was not much evidence of jaundice or cause for retention and liver damage except the neoplasm of which we were thinking. I think if I had realized at that date the 90 per cent when there was only a 10 per cent jaundice in the serum it might have swung me over. The leg pains too and the bloody pleural fluid should have been given more weight. I assumed without evidence that the blood in the pleura came from the tap wound itself. Bloody pleural fluid is usually due to a neoplasm.

CASE 19102

EIGHTEEN MONTHS OF VOMITING AND PAIN IN A MAN OF FIFTY-SIX

SURGICAL DEPARTMENT

An Italian laborer fifty-six years old entered complaining of vomiting and pain in the stomach of eighteen months' duration. He spoke almost no English and the interpreter, another patient, spoke very little, so that the history is not reliable.

Eighteen months before admission he had a brief attack of severe vomiting. For the next seven months he had frequent stomach ache and vomiting. For eleven months he had had almost constant pain, at first sharply localized in the epigastrium, later spreading over the whole abdomen but most severe in the epigastrium. The vomiting usually occurred about an hour after meals and relieved the pain, which recurred an hour later. Food did not relieve it. For nine months he had had pain in the penis on beginning micturition, with difficulty in starting the stream. The urine was occasionally red. Three months before admission he spent eighteen days in another hospital, where x-rays were taken. He left unrelieved. Recently he had had some pain in the lower lumbar region. For a year his bowels had been constipated. A powder had given relief until the past ten days, when he had had no movement. With hard stools he had had some bleeding, due he thought to hemorrhoids. In three years he had lost 75 pounds. His present weight was 125. He had never vomited blood.

The family history was not obtained.

The only previous illness was malaria. He frequently felt dizzy, unsteady and weak, and his hands and feet easily got cold. He was extremely worried and frequently despondent.

Physical examination showed a cachectic, old appearing man with dry skin. The mucous membranes were pale and dry. The sclerae were subicteric. There were small epitrochlear and inguinal lymph nodes. The lungs were hyperresonant and clear except for occasional moist râles at the right base behind. The heart was not enlarged. The sounds were distant, the action regular. There were no murmurs. The pulses were normal. The artery walls were beaded and tortuous. The blood pressure was 130/100. There was a firm, fixed, irregular, slightly tender mass in the upper epigastrium. A tender liver edge was felt one fingerbreadth below the costal margin. Rectal examination showed almond sized nodes on both sides and anteriorly near the tip of the examining finger. The pupils were irregular but reacted normally. There were corneal clouds over both eyes. The fundi showed arteriosclerosis and pallor. The knee jerks were normal. The ankle jerks were not obtained.

The amount of urine was normal when recorded. The specific gravity was 1.012 to 1.025. There was the slightest possible trace of albumin at one of three examinations. One of two sediment examinations showed occasional white cells, no red cells. The non-protein nitrogen was 19 to 28. Blood examination showed 9,400 white cells, 85 per cent polynuclears, hemoglobin 45 per cent, reds 2,520,000, slight achromia. A Hinton test was negative. Three stool examinations showed a strongly positive guaiac. Three specimens of vomitus gave a positive to a very strongly positive guaiac. On gastric lavage no fluid was obtained after prolonged attempts. Fluid introduced came back clear. The fasting contents of the stomach were watery and colorless; no free acid; combined acid 1 per cent; guaiac negative. No fluid could be obtained at either half an hour or an hour after prolonged efforts. Shortly before the tube was passed the patient vomited black material giving a 4+ guaiac.

Before operation the temperature was 97.7° to 100.1°, the pulse 65 to 95, the respiration not remarkable.

X-ray examination showed that after the barium passed down the esophagus it met definite obstruction just above the cardia. There was slight dilatation of the esophagus above this, with very active peristalsis. The portion of esophagus for a distance of one inch above the cardia was irregular in outline and constricted. No definite ulcer crater could be demonstrated. The fundus of the stomach appeared normal. There was gross deformity of the entire antrum, this portion of the stomach being reduced to a very narrow tube the edges of which were irregular in outline. The rugae were completely obliterated. The duodenal cap was of normal size and contour. The loop appeared normal. Examination of the colon two days later showed about 80 per cent of the barium retained in the stomach. No definite variation from normal could be visualized in the colon.

A surgical consultant reported that it seemed very unlikely on first consideration that any surgical procedure would be justified. After learning the results of the barium examination he thought operation might be worth doing. On the ninth day operation was done. After the first week the patient failed more and more rapidly. He complained of pain in the abdomen and back. On the fourteenth day after operation he vomited everything taken. On the fifteenth day he died.

Clinical Discussion

Dr. Maurice Fremont-Smith: The history suggests pyloric obstruction, and I do not see how we can tell from the history what is the cause of that obstruction. He has lost a great deal of weight, but he would lose a great deal of weight from starvation with pyloric obstruction.

The urinary symptoms are probably prostatic in origin, and again it is difficult to tell from that history whether we are dealing with a carcinoma of the prostate or a simple obstruction. Pain in the penis on beginning micturition is not the usual first symptom of prostatic disease. One expects a story of increasing frequency, and then gradually increasing difficulty in passing urine. We know that a carcinoma of the prostate does rather characteristically cause pain in the penis. I think that is an argument in favor of that diagnosis.

"The sclerae were subicteric" means nothing.

"There was a firm, fixed, irregular, slightly tender mass in the upper epigastrium." That alone suggests carcinoma, and probably carcinoma of the stomach. But in carcinoma of the stomach the mass is frequently movable, so it may not be of the stomach.

This rectal examination does not tell us enough. We ought to know how hard the nodes were; we ought to know whether they were smooth or rough. Is there any further description, Miss Painter? It is pretty important for us to have all the information we can get about that prostate.

Miss Painter: There is nothing more.

Dr. Fremont-Smith: We may have a cancer of the prostate, and we may have metastases from that to the liver. In that case this firm, irregular, rather tender mass in the epigastrium would be liver. On the other hand we are told that the liver edge is felt one fingerbreadth below the costal margin, and there is no mention of this mass being connected with the liver. If it is liver how can we explain his

vomiting of over a year's duration? On the other hand, has he a carcinoma of the stomach with pyloric obstruction, as I first believed, and perhaps metastases to the liver? In that case how explain the prostatic findings? Are they significant or are they not? We really have not enough information, I think.

In obstructing prostate from any cause we expect infection. We do not always get infection early, but we very frequently get it as the process goes on. I do not think the absence of infection in the urine necessarily argues against prostatic obstruction. Nor do we have to have many red cells in the urine, even in carcinoma. We expect to have some red cells in the urine, but red cells might come from a perfectly benign prostate, so we are not advanced in our differential diagnosis.

The hemoglobin was 45 per cent, so that probably the pale fundi were the fundi of anemia,—a secondary anemia due either to bleeding of which he was not aware, or to a carcinoma, and the marked anemia might suggest that if it is carcinoma there is metastasis to the bone marrow, although in that case one would expect to find abnormal white cells.

I do not know why no fluid was obtained on gastric lavage. The fluid introduced came back clear.

DR. RICHARD C. CABOT: It looks as if it was at the cardia, doesn't it?

DR. FREMONT-SMITH: So that we have good evidence that he has carcinoma not only perhaps in the liver but in the stomach, and as Dr. Cabot said, the inability to get gastric contents suggests that it is high in the stomach rather than low. We are feeling then in the epigastrium probably not the stomach, not the mass of carcinoma, but the metastasis into the liver.

DR. GEORGE W. HOLMES: These films demonstrate very well what was found at the first observation. In the first film we see the delay in the lower end of the esophagus with possible dilatation of the lower end of the esophagus, not definite. The rugae along the wall of the esophagus can be seen. In the films taken of the stomach there is a filling defect from the pylorus to near the midportion of the stomach and the walls near the filling defect are very ragged and irregular. It is quite possible that this process extends upward to the cardia and may account for the obstruction in the esophagus. It does not seem necessary to diagnose two processes, one in the cardia and one in the pyloric end of the stomach. The lesion in the pyloric end of the stomach could account for the delay in the esophagus.

DR. FREMONT-SMITH: Of course you cannot tell how large that mass is.

DR. HOLMES: We do not know how much is due to spasm and how much to tumor. Spasm of the lower end of the stomach can easily be interpreted as carcinoma, especially when there is an ulcer high on the lesser curvature. This patient, however, also had extreme stasis, which is not common in carcinoma.

DR. FREMONT-SMITH: That irregularity of course must be neoplasm, must it not?

DR. HOLMES: Yes. We have an extensive annular obstructing lesion involving the whole lower end of the stomach,—I should think in all probability carcinoma. The barium-filled colon appears to be normal.

DR. FREMONT-SMITH: I think we should have more reason to believe that there were metastases in the liver if there were not this note about the liver edge. We have a carcinoma and we may very well feel the mass. I do not know why it was so fixed. There are a great many carcinomas in that region of the stomach which are movable, pushed down by the diaphragm when the patient breathes.

With regard to the prostate, I do not think we have any definite evidence that there is anything wrong. Of course a person can have two distinct carcinomas, and he may have cancer of the prostate. The urinary findings, however, the absence of much blood and of much infection are all evidence against carcinoma. The physical examination is not very helpful. The pain in the penis is the only thing we have, and that may have to go without explanation. It is a finding in carcinoma of the prostate with metastases.

PREOPERATIVE DIAGNOSIS

Carcinoma of the stomach.

OPERATION

Upper left paramedian incision. On opening the abdomen a moderate amount of straw-colored fluid was found which apparently was diffusely spread throughout the abdominal cavity. Immediately under the incision was the anterior wall of the stomach, which when followed down showed the stomach to be involved in a large malignant mass involving the surrounding tissues. The transverse mesocolon was so overgrown with metastases that the posterior wall of the stomach was inaccessible. The liver showed malignant growth.

An anterior gastro-enterostomy was then done in the usual manner with three posterior suture lines and two anterior suture lines. Then an entero-enterostomy was done between the two loops of jejunum which had been brought up and attached to the stomach.

FURTHER DISCUSSION

DR. FREMONT-SMITH: They probably made the enterostomy between two loops of jejunum because there was so much carcinoma that there was obstruction below the duodenum as well as above.

A STUDENT: Why do you think he died of peritonitis?

DR. FREMONT-SMITH: I think that is usually the cause of death in these attempts to work on a malignant intestine.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Carcinoma of the stomach.
Generalized carcinomatosis.

DR. MAURICE FREMONT-SMITH'S DIAGNOSES

Carcinoma of the stomach.
Peritonitis.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Carcinoma of the stomach with extension to the liver and the pancreas and metastases to the mesenteric glands.

Peritoneal carcinomatosis.

2. *Secondary or terminal lesions.*

Pulmonary congestion, slight.
Jaundice.
Ascites.

PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY: Autopsy showed an extremely large cancer of the stomach which ran along the lesser curvature and along the posterior wall all the way from the pylorus up to and including the cardia. On the posterior wall it had invaded deeply through the musculature, the serosa, had obliterated the lesser peritoneal cavity, and had actually grown by direct extension into the liver, although there were no real metastases in the liver. All the tumor we found in the liver seemed to be continuous with the mass in the stomach.

The prostate was quite negative. The nodules felt on rectal examination were obviously carcinomatous implants in the culdesac of Douglas. There was a diffuse carcinomatous involvement of the entire peritoneal surface and no very definite evidence of an inflammatory peritonitis in addition. I should not say on the whole we found anything of significance beyond carcinoma as a cause of death.

DR. FREMONT-SMITH: I wonder whether that immovable mass is a good contraindication to an attempt at operation?

DR. MALLORY: I think it is generally considered to be.

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DEFICIENCY DISEASE FROM LACK OF SPECIFIC GASTRIC REACTION: THE ETIOLOGY OF PERNICIOUS AND RELATED MACROCYTIC ANEMIAS

THE development of knowledge concerning disorders of nutrition has progressed with startling rapidity during the past twenty years. Much of the information has been obtained from animal experimentation for the benefit of mankind. Animal physiology, however, does not always imitate what occurs in man; and it is by clinical investigation that the final knowledge regarding human nutritional problems must be settled. Institutions for research do not by their mere existence solve the problems of medicine, but they may provide a favorable environment for progress. In the Thorndike Memorial Laboratory of the Boston City Hospital, the clinic is by far the most important "apparatus" of the laboratory. The City of Boston is to be congratulated on wisely maintaining in the midst of a wealth of material a clinic which contributes greatly both to the care of the sick of Boston and to the advancement of the knowledge of medicine. The arrangements of this clinical laboratory are such that there is perhaps no other place in the country where Dr. William B. Castle and his associates could so effectively have carried out their epoch-making contributions to medicine. By work carried on during the past five years an important and fundamental principle concerning the origin of human deficiency diseases has been clearly defined: a defective nutritional state can arise in the presence of a proper diet from specific defects of the gastrointestinal tract.

Castle and his associates[1] have shown by splendidly planned and controlled clinical observations that Addisonian pernicious anemia is a deficiency disease conditioned by the lack of a specific constitutional factor. This intrinsic factor is present in the normal gastric juice and absent in that of cases of pernicious anemia in relapse. Its function is to interact with an extrinsic factor in the food to produce specific effects on blood formation. The properties of the intrinsic factor do not conform to any of the hitherto known secretory products of the stomach. First, it was shown that appropriate mixtures of beefsteak and normal human gastric juice given daily to pernicious anemia patients caused with regularity prompt hemopoietic responses, whereas neither ingredient alone produced any such effect. Subsequently, the extrinsic factor was found to be present in autolyzed yeast in approximately 20 times the concentration found in beefsteak. Further critical observations indicated that in general the characteristics and distribution of the extrinsic factor correspond to those of vitamin B_2 (G).

As Castle and his associates have pointed out there are three possible mechanisms, singly or combined, which may produce similar types of macrocytic anemia: (1) deficiency of the gastric intrinsic factor; (2) deficiency of the food extrinsic factor; (3) improper absorption or utilization of the product of interaction of the intrinsic and extrinsic factors. It is the first mechanism that is chiefly responsible for Addisonian pernicious anemia. Tropical macrocytic anemia, as occurs in sprue, may respond to concentrates of yeast. Wills'[2] studies pertaining to this are important. Vaughan and Hunter[3] have also demonstrated that yeast concentrates alleviate the macrocytic anemia of coeliac (Gee's) disease. These results can be explained on the basis of the second mechanism, namely, a lack of the extrinsic factor of the diet. In pernicious anemia and advanced cases of sprue, large amounts of liver extract, given by mouth, are sometimes ineffective, while the usual parenteral dose produces an excellent response, thus illustrating that defects of absorption may play an important etiological rôle. With Dr. Maurice B. Strauss, Castle has shown that in the macrocytic

anemia of pregnancy a temporary lack of the intrinsic factor may develop and that this factor may reappear in certain cases of Addisonian pernicious anemia under treatment. It is thus evident why certain cases of macrocytic anemia will respond both to liver extract and allied products and to autolyzed yeast rich in vitamin B_2 (G). The difference appears to depend on the presence or absence of the intrinsic factor of the gastric juice.

Castle has thus set forth a new concept of the relation of certain vitamins to the conditions caused by their lack: their action may depend upon a specific process in the gastrointestinal tract or elsewhere in the body. Although this has been shown in only certain macrocytic anemias, it is not improbable that a similar state of affairs will be demonstrated for other conditions.

Dr. Castle is to be congratulated on his brilliant work for which he was awarded most justly in 1928 the Warren Triennial Prize of the Massachusetts General Hospital, and in February, 1933 the John Phillips Memorial Prize of the American College of Physicians. As his work, now recognized all over the world, becomes still better known one should expect and hope to see him receive further honors.

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HEARINGS ON TWO IMPORTANT BILLS BEFORE THE MASSACHUSETTS LEGISLATURE

A HEARING on House Bill 106 was conducted by the Committee on Public Health February 14, 1933. The purpose of this bill was to confer on the Board of Registration in Medicine the right to reject applications for examination from graduates of those medical schools which are not approved by this Board. The arguments of the proponents were presented by Dr. Stephen Rushmore, Secretary of the Board of Registration in Medicine, and emphasized by Dean Begg of the Medical School of Boston University and others. Dr. Rushmore's argument appears in the issue of this *Journal*, Vol. 208, No. 7, page 369 and warrants careful reading.

The interruptions and comments by some members of the Committee seemed to indicate a feeling of hostility to the Board, although the motive of the petitioner is purely to protect the public health of this Commonwealth through an assurance of well-qualified physicians.

As clearly stated by Dr. Rushmore no competent estimate of the quality of instruction furnished by medical schools can be made until the Board shall have been given authority to examine these institutions.

The composition of the Committee raises the question of the propriety of having a dean of a medical school act in dealing with the bill, for one of its members holds this position in the published bulletin of one of these schools in Massachusetts.

This question has been referred to the Speaker of the House of Representatives and in a written communication this gentleman reports that the Dean referred to receives no money compensation as such and therefore is not subject to the rule of the Legislature.

We present rule of the House, No. 24, which sets forth that "no member shall serve on any committee in any question where his private right is immediately concerned distinct from the public interest" and again under rule 63 "no member shall vote upon any question where his private right is immediately concerned distinct from the public interest".

We respectfully submit that membership on a governing body, which may be affected by legislation, constitutes a private right which might warp one's judgment in dealing with proposed legislation by the one who has this private right.

Courts have always felt that a judge directly or indirectly connected with an organization on trial may not properly sit in proceedings affecting such organization. The question of money as determining the propriety in the case in question is in our opinion far-fetched, for there are positions in organizations which are prized highly.

In the hearing on House 208 held February 28 the consideration of the bill to authorize the Middlesex College of Medicine and Surgery, Inc. to confer the degree of Doctor of Dental Medicine, the same situation existed, for the Dean of this medical college sat as a member of the Committee in charge of the bill and took an active part in questioning the speakers. In this hearing the dental profession, the State Commissioner of Education and the Secretary of the Board of Registration in Medicine appeared in opposition, basing their attitude on the alleged discrimination exercised by the great majority of the registration boards of this country against this school of medicine.

In this connection it may be of interest to note in the report of the November examination by the Board of Registration in Medicine that of thirty-eight graduates of Middlesex College of Medicine and Surgery only eighteen secured registration. It is surprising first, that this school does not seek the advice and help of the several state boards of registration with the purpose of meeting the standards of these boards and secondly, that the Commonwealth of Massachusetts does not authorize either the Board

of Registration in Medicine or the Department of Education to determine whether its methods and equipment are adequate for the purpose specified in its charter.

This question has been before the Legislature for many years, but without progress, because there appears to be a belief that the Middlesex College of Medicine and Surgery is the victim of a powerful and ruthless combination to destroy competition in the field of medical education. The fact is that the generally approved medical schools in this country have no occasion to fear competition, since they are unable to accommodate more than a proportion of applicants for matriculation.

When Middlesex can show to the world that it can and will meet the standards as defined by the Council on Medical Education and Hospitals and the Association of Medical Colleges it will be honored by approval.

VITAMIN STANDARDIZATION

Professor E. Fullerton Cook, Chairman, U. S. P. XI Committee of Revision has announced the formation of a U. S. Pharmacopoeial Vitamin Advisory Board which is coöperating with Government officials at Washington.

Plans have been made for the distribution of vitamin standards to scientific laboratories and research workers in the U. S. and a "Reference Cod Liver Oil" will be available for use in commercial laboratories. Studies will be made on the question of the deterioration of the vitamins in cod liver oil and other preparations.

The Pharmacopoeia of the United States was the first official pharmacopoeia to establish standards for sera and to introduce biological standardization of digitalis and some other drugs; it seems to be leading in the recognition of vitamins.

THIS WEEK'S ISSUE

Contains articles by the following named authors:

Hudson, Henry W. Jr. M.D. Harvard University Medical School 1925. F.A.C.S. Assistant in Surgery, Harvard Medical School. Assistant Surgeon, Boston Children's Hospital and Cambridge Hospital. Surgeon, New England Home for Little Wanderers. His subject is "Meckel's Diverticulum in Children." Page 525. Address: 66 Commonwealth Avenue, Boston.

Lund, Fred B. A.M., M.D. Harvard University Medical School 1892. F.A.C.S. Surgeon-in-Chief, Carney Hospital. His subject is "Lipomata of the Uterus with Report of a Case." Page 536. Address: 319 Longwood Avenue, Boston.

Hurxthal, Lewis M. M.D. Harvard University Medical School 1923. Senior Physician, Medical Department, Lahey Clinic. His subject is "The Heart in Hyperthyroidism." Page 538. Address: 605 Commonwealth Avenue, Boston.

Means, J. H. A.B., M.D. Harvard University Medical School 1911. Jackson Professor of Clinical Medicine, Harvard Medical School. Chief of the Medical Services, Massachusetts General Hospital. His subject is "Hypothyroid Heart Disease." Page 541. Address: Massachusetts General Hospital, Boston.

Restall, Malcolm M. M.D. Harvard University Medical School 1926. Address: 66 Pleasant Street, Marblehead, Mass. Associated with him is

Burrage, Walter S. M.D. Harvard University Medical School 1926. Assistant in Medicine, Massachusetts General Hospital and Courses for Graduates, Harvard Medical School. Address: 261 Beacon Street, Boston. Their subject is "An Unusual Type of General Reaction Following Treatment for Hay Fever." Page 543.

Hawes, John B. 2nd. A.B., M.D. Harvard University Medical School 1903. President, Boston Tuberculosis Association. Director, Massachusetts Tuberculosis League and National Tuberculosis Association. Address: 11 Marlborough Street, Boston. Associated with him is

Stone, Moses J. M.D. Tufts College Medical School 1921. Assistant Professor in Diseases of the Chest, Boston University Medical School. Examiner in the Tuberculosis Clinics of the Boston Health Department. Physician at the Chest Clinic of the Massachusetts Memorial Hospitals. Assistant in Medicine, Beth Israel Hospital. Address: 11 Marlborough Street, Boston. Their subject is "Physician's Responsibility in the Examination of Contact Cases of Tuberculosis." Page 544.

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FIFTY-SEVENTH ANNUAL REPORT*

Report of the Executive Committee for 1932

The usual monthly stated meetings of the Executive Committee from October to May have been held during the past year, and also special meetings in June and November. At the stated meetings, routine business of the Committee has been conducted. Action by the Finance Committee under the advice of Scudder, Stevens & Clark has been ratified and consideration given to changes in investments and in insurance upon the Library and its contents. Means of reducing expenditures and methods of obtaining new

*Read at the Annual Meeting, January 17, 1933.

members have been studied and put into effect.

At the March meeting the Librarian suggested changes in the By-Laws affecting the constitution of the Committees on Medical and Social Meetings and on Membership and Elections. After discussion at this and subsequent meetings, these changes were made by the Corporation at a special meeting July 6, 1932.

In October, Dr. Bartol's resignation from the presidency to take effect at the end of the year was received and accepted with extreme regret.

Throughout the year reports have been received from the chairmen of the sub-committees and from the Director, on the affairs of the Library. Continuous, faithful and efficient service has been given by employees.

At the December meeting, resignation from the Executive Committee of Dr. Cummin was accepted with regret by the Committee.

At the special meeting in June, action was taken on the petition to change the By-Laws, already referred to, and at the one in November an offer was considered from the General Fireproofing Corporation for the construction of the uncompleted stacks. This offer, although a favorable one, was declined as the Committee felt it could not be financed at the present time. Meetings have been held throughout the year by seventeen different organizations in the Library Rooms, with a total attendance of 4284.

The membership of the Library on Dec. 31, 1932, was as follows:

Total membership		910
Changes during the year were:		
Accessions		148
Losses		74
Resignations	43	
Deaths	13	
Dropped	18	
NET GAIN		74

Of the total membership Jan. 1, 1932, 686 were Fellows.

HORACE BINNEY, *Secretary.*

REPORT OF THE LIBRARIAN*

In presenting a record of the activities of this institution for the year now closing, it is feared that the account may be disappointing. The main reasons are only too obvious and call for no extended comment. Necessity for retrenchment has been quite as imperative in handling the affairs of the Library as in those of any other project involving expenditure of income derived from invested funds and dues of a membership hard hit by economic stringency. Passing of dividends, defaulting of interest on bonds and uncollectible annual membership fees have reduced available resources by several thousands of dollars. To meet this loss, numerous economies have been put into effect in order to balance our budget. The necessity for such economies is regrettable, for they are reflected in the service which the Library seeks to render to the community. To the uninitiated, it might seem that certain of the institution's activities are being developed at the expense of other and more essential ones. In order to understand the situation, it would be necessary to detail the individual bequests and indicate the restrictions placed by the donors upon the sums bequeathed. Unrestricted income, and it is from this class that must be derived such moneys as are needed to keep the building in repair, pay salaries, fuel and lighting charges, janitor service and subscription to periodicals, has been drastically cut. Every economy in respect to such expenses, that can be effected, has been adopted. Dispensing with the services of the first occupant of the office of Reference Librarian has resulted in a considerable saving through transference of her duties and title to one of the regular attendants until such time as it is possible to restore the salary that such service should command. A further substantial economy has been effected by discontinuing for the present, subscriptions to certain expensive foreign periodicals whose value was chiefly to research workers. Special funds for binding and the purchase of certain classes of books can be used for nothing else. To some it may appear that the continued buying of Incunabula and rare and costly books pertaining to Jewish Medicine is a practice that might be curtailed but the funds supplying money for such purposes, viz., the Bullard and Hyams bequests, can be employed in no other way and the motto on the Library's seal indicates that the object of the Library is to "preserve" as well as "teach". The only possible way of securing any substantial increase in our income is through an increase in our membership and this the Membership Committee has been seeking to accomplish with a gratifying measure of success, considering the times. There can be no quarrel with any one who is obliged to base his refusal to support the institution upon purely financial grounds. Too frequently, however, there seems to be a lack of that feeling of professional pride which should actuate all, and does influence a great many, in the existence of an exceptionally well-equipped library in our midst, the outgrowth of self-sacrificing effort on the part of our predecessors, which links us up with a storied past in a way that no other professional organization now existent, except the Massachusetts Medical Society, can do. We take pride in our medical schools, we glory in our philanthropic organizations; our hospitals we are pleased to regard as second to none but our Medical Library, which nurtures them all, some seem disposed to forget.

*Read at the annual meeting, January 17, 1933.

We may pass over the topic which has been uppermost in our thought during the past three years and that is the completion of the stacks and reading-room facilities. It is obviously not a time to become agitated over this matter. The cycles of business depression and the cycles of urgent necessity for the physical expansion of this Library's facilities seem to have coincided more than once in the past. If our predecessors were not discouraged, it is craven in us to become so and during the period of "marking time" we must see to it that our ideals are not lowered, nor our present alignments disintegrated, for should either happen it will be more difficult to resume our advance.

Through the generosity of Mr. Alfred Ela, it has been possible to fit up quarters on the first floor back of the coat room, as a rest room for the women employees. Mrs. Henry R. Simons continued her support of the fund with which to purchase books on Art Anatomy.

The task of cataloging the Latin theses, of which the Library possesses a large number, has been undertaken and is being paid for by outside funds.

It is not amiss to remind you that a great service could be rendered the Institution if among its friends there could be found some who would interest themselves to secure the money for a memorial reading room. The space is available. What is lacking is furniture, decoration, floor covering and lighting facilities. Providing such facilities would not only be of benefit to library users but it would ease up on the attendants in Holmes Hall, for the Reading Room would then be largely a self-serving department and we are at a decided disadvantage in not being in a position to offer the best service in our periodical department.

The record of the departmental activities of the Library follows and shows, that though necessarily restricted, we have still been able to "carry on" in a rather satisfactory manner.

Briefly summarized, we may note that in the Cataloging Department, there are shown 163,283 volumes and 109,816 pamphlets which includes 2843 additions this year of new books and 3353 pamphlets. There are among the new books 264 volumes containing 3839 French theses. Binding was cut to a minimum; only 566 volumes having been bound. Rather fewer books were used by a somewhat larger attendance, as compared with 1931. Evening attendance has increased.

The total number of periodicals available for use was 879, 516 of which were procured through subscription. Inter-library loans are a measure of the usefulness of this Library outside of its service to our own members. We made 1295 loans to 89 different borrowers, located in 13 states outside of Massachusetts, and to three Canadian Universities. Pursuing the policy of economy, only four new periodical subscriptions have been made during the year and nineteen files of journals have been completed. Eight members of the Library have given us presentation copies of their works.

A large number of donations of especial interest and value have been received. The Library is grateful for being remembered in this way as we are thus enabled to add to the material constantly accumulating which may at some future date be arranged as a Museum of Medical History. In addition to these special donations, one hundred and ninety-two individuals and institutions have remembered the needs of the Library in one way or another.

The Medical History Club has held six meetings, the attendance at which has shown a gratifying increase. This may be interpreted to reflect a greater enthusiasm for this important subject which it has been the hope of the Library to be able to foster in this community.

We have to record the loss, through death, of one of our most faithful and efficient workers, Miss Persis Anderson. Most of her service was rendered behind the scenes, so to say, i.e., she was in the Cataloging Department, but it was none the less important. Her personality had gone a long way in contributing to an esprit de corps, among the Library Staff that has enabled it to accomplish a vast amount of work under adverse conditions. She had served the institution faithfully for over twelve years, and as is sometimes the case, as the years go by, the interests of the object served become so closely identified with those of the one who serves, that a situation develops that makes replacement extremely difficult, if not impossible.

During the year a modification of our by-laws has been proposed which it is hoped you will shortly ratify, the purpose of which is to draw into the service of the Library the younger men of the community, ensuring frequently recurring infusions of new ideas which will reflect such modifications in policy, as ever-changing conditions very properly demand and to which too great conservatism might not be responsive. Another object sought was to do away with any implication of "star chamber" methods in the selection of those upon whom must fall the responsibility of administering this trust.

It now becomes necessary for those of us who have been so fortunate as to have served with Dr. Bartol to testify to the great regret which we all felt when he made known to us his desire to pass on to another, responsibility for the conduct of the Library's affairs. No one who has not been privileged to experience it can know how delightful have been the relations that have obtained in the Executive Committee. Any one who knows *him,* however, would realize that this must of necessity have been so. Perhaps we who are to feel most keenly his absence from active participation in the direction of the affairs of the institution can express in no better way the

honor we would accord him than we have done in accepting with regret, his resignation, thereby placing his name among the list of distinguished men who have in the past occupied the position which he is about to vacate—Oliver Wendell Holmes, Richard Manning Hodges, Francis Minot, David William Cheever, George Brune Shattuck and George Howard Monks. We have the assurance that, though not officially to be associated, his interest will be as great as ever, and may I say to his successor, whoever he may be, that we are confident his selection for this office will be influenced by a determination on the part of the members of the Library that the same high qualities which have dictated their selection on all previous occasions will have actuated them in their choice today.

CHARLES F. PAINTER, *Librarian.*

MISCELLANY

A RADIO MESSAGE PREPARED AND SPONSORED BY THE COMMITTEE ON PUBLIC EDUCATION OF THE MASSACHUSETTS MEDICAL SOCIETY FOR THE DEPARTMENT OF PUBLIC HEALTH

WHY A HEALTH DEPARTMENT?*

BY MARY R. LAKEMAN, M.D.

To find our answer to this question let us take a flight backward in time to the day when there were no health departments (or boards of health, it matters not which term we use). In the first place, we do not know much about health conditions in the olden days, for there are no records. No one set down how many babies died before they reached their first birthday, though a visit to any old New England cemetery will convince us that there were a good many who did not live even to complete the first month of life. So, we have already found one reply to the question, "Why a health department?" A board of health is needed to keep books. Society reckons its profit and loss in terms of human lives.

BOSTON BOARD OF HEALTH

That a need for some organized means of protecting the health of the people began to be felt toward the end of the eighteenth century is apparent, for in 1799 a board of health was formed in Boston, the first in the country, with Paul Revere as its first president. (Yes, it was the same Paul Revere who twenty-four years earlier took that famous midnight ride to warn the farmers of Middlesex that the British were coming.)

SMALLPOX

At the time the new Board of Health was created in response to the demand of the people, smallpox was raging and I have no doubt that it worried even so doughty a health officer as Paul Revere. He had reason to worry. Sickness was in every house and it was difficult to find people to bury the dead! We realize how crude were the ideas of that day as we note that in the rules of this new and very up-to-date Board of Health reference was made to nothing except nuisances and the importation of bedding and feathers. While smallpox raged at their doors, the people could do nothing about it but regulate the importation of bedding and feathers.

VACCINATION

Soon after this it was discovered in Europe that vaccination had the power to prevent smallpox in a person who had been exposed. Dr. Benjamin Waterhouse performed the first vaccination ever done in America and he must have been confident of its potency, for he chose his own son as his first subject. Opposition was intense, not alone from the medical profession, but from the clergy and other leaders of the people. Dr. Waterhouse and his supporters fought their way through, however, until nine years later all towns were directed under the law of Massachusetts to vaccinate their inhabitants. Within the next thirty years the disease had been almost completely controlled. But, a new generation was to grow up, a generation which had not known the horrors of smallpox. After several bitter experiences, resulting from the repeal or nonenforcement of the vaccination laws, and culminating in the serious outbreak of 1872 when 1,697 fatal cases occurred, the people finally awoke to the fact that smallpox was an unnecessary evil, and from that day to this the terrors of smallpox have become a matter of history so far as Massachusetts is concerned. The disease is always lurking in the background, however, ready to break out afresh if vaccination is neglected! Here is a second reason why we need a board of health, to keep smallpox in its place.

STATE BOARD OF HEALTH

As the cities and towns in Massachusetts grew, and the people began to live more closely together, new problems arose, problems involving not alone one community but several. To meet these, in 1869, a State Board of Health was organized to assist cities and towns in obtaining safe water supplies and in disposing of their sewage.

TYPHOID FEVER

Typhoid fever was the problem of that day, breaking out at intervals in widespread epidemics. It was soon noted that these epidemics were prone to follow the water courses. That Lowell and Lawrence should have had a serious outbreak of typhoid fever at the very time the Lawrence Experiment Station was completed was wholly a coincidence, but it was a fortunate one so far as the future of sanitary science was concerned, for it was through knowledge gained in this experiment station that engineers were able to make

*Station WBZ, February 21, 1933, 4:15 P.M.

river water safe. The result was a prompt reduction in typhoid fever, a reduction which has been continuous and so complete that teachers in medical schools now bemoan the fact that they cannot find a case of typhoid to show their students. There is no question that we need health departments, *both* State and local, to assure us of wholesome water supplies.

BACTERIOLOGY

In the days of old it was believed that dirt and filth of all sorts caused disease; hence, indiscriminate attacks were made upon any unsightly heap of refuse.

A great revolution in such ideas took place, however, in the early 80's, when Louis Pasteur in France announced his germ theory of disease. Upon this discovery has been based a whole new science, that of bacteriology, a science which has not even today reached the peak of its possibilities in advancing knowledge of disease and its prevention. So, here we find another answer to our question. We must have public health laboratories to help the doctors make their diagnoses, to test milk, to distribute vaccines and antitoxins. The bacteriological laboratory is an absolute essential today.

The name Pasteur has been immortalized in the term which has become familiar to us all, i.e., pasteurized milk. This brings us once more to the door of the board of health. Who, if not the publicly authorized agent of the people, is to inspect our milk and food supplies and hold these up to a standard? Surely a board of health is needed to safeguard our food supplies.

DIPHTHERIA

Following close upon Pasteur's discovery of bacteria came, step by step, positively amazing developments in diphtheria control. The germ whose toxin causes the disease was identified, antitoxin was produced and toxin-antitoxin applied in protecting children from the disease, the Schick test for demonstrating susceptibility and later diphtheria toxoid; all these came in rapid succession to perfect the art of preventing diphtheria. Today we can say that the control of diphtheria is one of the great triumphs of modern public health. Diphtheria is no longer a menace to any community which is dominated by people of intelligence and honesty. Surely, here we find another answer to our question. Indeed, we need a board of health to plan and to lead community measures to protect *all* children from diphtheria.

TUBERCULOSIS

Late in the last century an entirely new method of treating tuberculosis became general in this country. (We didn't call it tuberculosis then, we called it consumption and spoke of it in awe-stricken whispers!) This was based on the experience of Dr. Vincent Y. Bowditch who, in his private sanatorium at Sharon in our own State, found that patients could be successfully treated even in the harsh climate of New England. Hitherto, it had been considered necessary to send patients to dry, warm climates. The suggestion of keeping patients outdoors during a New England winter was at first received as utterly impracticable, but the soundness of this practice was soon confirmed by the experience of another remarkable man, Dr. Trudeau, of New York, who with his brave wife went to live in a cottage in the Adirondacks winter and summer. Dr. Bowditch and Dr. Trudeau thus discovered the secret which has enabled the human race to make progress in its great fight against tuberculosis. The secret was that the people themselves, through intelligent understanding, have the power to control the disease.

Tuberculosis in this State is less than one-half as prevalent as it was in 1912, with every prospect that it will be still further decreased in years to come. This is one of the great challenges of our day, and to meet it we must have a competent board of health, else how shall we know whether progress is being made and how protect our children and ourselves from exposure?

VENEREAL DISEASES

There is yet another disease problem which stares us in the face and which we have done our best not to see. It is the twin problem of syphilis and gonorrhea. Yes, these diseases exist; they are all about us, and we shall not be rid of them until we face them frankly and learn what every mature person should know. Here we have special need of a board of health, for both of these diseases are at times contagious and laboratory service is absolutely necessary.

CHILD HYGIENE

Now, let us look ahead and take a peep into the future. After all, the acute communicable diseases in which such brilliant results have been achieved are responsible for only about seven per cent of all the deaths in our State. Are we going to be content to limit our efforts to these few, when just around the corner are ever-widening opportunities for life saving? Indeed, no. We know that deaths at childbirth of both mothers and babies are at least in part preventable. It is, therefore, someone's responsibility to provide for every prospective mother, regardless of her ability to pay, the same skilled care which every wise mother who can employ a private physician is having today. While this responsibility must be shared by the family, the medical profession, and the board of health, we must rely upon a responsible board of health to see that facilities are provided so that every mother may be assured of proper care and may have knowledge to prepare her for motherhood and for the complicated task of caring for her young children during the first six years, the time of their greatest growth and development.

ADULT HYGIENE

Looking farther ahead we see the great and growing problems of chronic disease. Heart disease, cancer, rheumatism, diabetes; these have not yet been faced as a responsibility of the local board of health, although in Massachusetts, under the leadership of the State Department of Public Health, an active program is under way aiming to defer the time of development of chronic diseases.

In these newer activities we cannot say that the sole responsibility rests on the board of health. There is need for the closest sort of coöperation between the physicians, the local hospitals and their clinics, visiting nurse associations, and all private agencies concerned with health. There must be joint effort for a common purpose if we are to avoid extravagant duplication.

We need health departments, State and local, as leaders among community forces, working for the health of all the people, giving out information as fast as it becomes available, planning jointly for the harmonious working out of a program agreed upon by all who are concerned with community health. With such unified action under the leadership of an efficient board of health, with trained personnel, greater advance is possible in the immediate future than has been achieved in all the years since Paul Revere concerned himself with the importation of feathers!

PHYSICIANS REGISTERED BY EXAMINATION HELD IN NOVEMBER, 1932, AND JANUARY, 1933

COMMONWEALTH OF MASSACHUSETTS BOARD OF REGISTRATION IN MEDICINE

NOVEMBER, 1932, EXAMINATION

Abrahms, Edward Theodore, 19 Merriam Street, Pittsfield, Mass.

Abrams, Archie Adam, Boston City Hospital, Boston, Mass.

Allan, Frank Nathaniel, 605 Commonwealth Avenue, Boston, Mass.

Allegree, Walter Johnson, City Hospital, Worcester, Mass.

Allen, Mary, 36 Hull Street, Boston, Mass.

Anopolsky, David, 6 Wabeno Street, Roxbury, Mass.

Ansell, Harvey Berle, Carney Hospital, South Boston, Mass.

Arbetter, Joseph Daniel, 12 Strathmore Road, Brookline, Mass.

Axelrod, George, 68 Cabot Street, Beverly, Mass.

Bair, Hugo Linden, 163 Kent Street, Brookline, Mass.

Barron, Arthur Henry, 84 Turner Street, Brockton, Mass.

Barry, John Reardon, 281 River Road, Winthrop, Mass.

Bell, Robert M., State Hospital, Taunton, Mass.

Bergin, Edward Patrick, Mt. Vernon Hospital, Mt. Vernon, N. Y.

Bourke, Robert William, 115 Salem Street, Malden, Mass.

Brooks, Oscar Disman, Yonkers General Hospital, Yonkers, N. Y.

Callanan, Eugene Francis, 13 Fernald Terrace, Dorchester, Mass.

Clarke, Henry Gisler, c/o 28 Maxfield Street, West Roxbury, Mass.

Cohen, William, Wesson Memorial Hospital, Springfield, Mass.

Cremer, Samuel Meyer, 71 Granville Avenue, Malden, Mass.

Cronan, Bernard Paul, 20 Warren Street, Norwood, Mass.

Davis, Paul Hanna, 3 Mascot Street, Dorchester, Mass.

Devlin, Thomas Peter, St. Elizabeth's Hospital, Brighton, Mass.

Doyle, Richard Joseph, St. Elizabeth's Hospital, Brighton, Mass.

Emch, Minna Elizabeth Libman, Worcester State Hospital, Worcester, Mass.

Evans, Francis Ernest, The Cedars, Mattapoisett, Mass.

Ferrone, Joseph Daniel, 97-01 38th Avenue, Corona, L. I., N. Y.

Footnick, Samuel, 7 Verrill Street, Mattapan, Mass.

Fothergill, LeRoy Dryden, 300 Longwood Avenue, Boston, Mass.

Fraser, John Alexander, Salem Hospital, Salem, Mass.

Gamboa, Armando Martin, 51 Vale Street, Boston, Mass.

Giacobbe, Joseph Rosario, 244 Main Street, Everett, Mass.

Giller, Isadore, 17 Homestead Street, Roxbury, Mass.

Goldstein, Frank, Brockton Hospital, Brockton, Mass.

Green, William Thomas, 300 Longwood Avenue, Boston, Mass.

Grushky, Herman Bernard, Franklin Square Hospital, Baltimore, Md.

Harasimowicz, Paul Peter, St. John's Hospital, Lowell, Mass.

Heels, George Eugene, Long Island Hospital, Boston Harbor.

Hertz, Saul, Massachusetts General Hospital, Boston, Mass.

Hickson, William James, 7 Marble Street, Gloucester, Mass.

Hines, William Edward, Salem Hospital, Salem, Mass.

Hite, Jacob William, 95 Audubon Road, Boston, Mass.

Hommel, Edward Howard, 9 National Street, South Boston, Mass.

Kennedy, Maurice T., 57 Lamb Street, South Hadley Falls, Mass.

Kunian, David, 48 Warren Street, Lynn, Mass.

Law, Eugene Rolland, 813 East 150th Street, New York City.

Leavitt, Henry Earl, 11 Lincoln Street, Stoneham, Mass.

Lennon, Benjamin Bernard, St. John's Hospital, Lowell, Mass.

Levison, Carl, 19 Ruthven Street, Roxbury, Mass.

Lopatin, Edward, 81 Longfellow Road, Worcester, Mass.

Maloof, Frederic Gordon, 22 East Brookline Street, Boston, Mass.

Mangione, Bernard Joseph, Fall River General Hospital, Fall River, Mass.

McCarthy, Charles Joseph, 100 Bellingham Street, Chelsea, Mass.

McCarthy, Robert Joseph, 83 Dakota Street, Dorchester, Mass.

McGinty, John Edward, 11 North Payne Street, Quincy, Mass.

McManus, Philip John, St. Elizabeth's Hospital, Brighton, Mass.

Miller, Samuel, 58 Boylston Street, Malden, Mass.

Mintz, Emanuel Ross, Massachusetts General Hospital, Boston, Mass.

Niemiro, Bernard Joseph, Prospect Heights Hospital, Brooklyn, N. Y.

Nelson, Richard Leedom, 5442 Merrimac Avenue, Dallas, Texas.

Norton, Paul Lawrence, Massachusetts General Hospital, Boston, Mass.

Ossen, Emil Zola, 33 Wedgewood Street, Everett, Mass.

O'Toole, John Bernard, Jr., St. Luke's Hospital, New Bedford, Mass.

Parish, Fred Arthur, 453 Avenue C, Bayonne, N. J.

Pett, Morris Hirch, 301 Main Street, Gloucester, Mass.

Ragonetti, Victor Vito, 1102 East 36th Street, Brooklyn, N. Y.

Rice, Jacob Maurice, 112 Glenway Street, Dorchester, Mass.

Rosenthal, Myer, 941 Morton Street, Dorchester, Mass.

Rovner, Miah Henry, 9½ Summit Avenue, Salem, Mass.

St. Louis, Lionel Ernest, 67 Bradford Street, Lawrence, Mass.

Shenker, Harold Lester, Kingston Hospital, Kingston, N. Y.

Shifflet, Byron Lee, 170 Kent Street, Brookline, Mass.

Short, Charles Lyman, Massachusetts General Hospital, Boston, Mass.

Souza, Charles Marshall, 173 Thompson Street, New Bedford, Mass.

Stoller, Harry Isaac, 198 Harold Street, Roxbury, Mass.

Swinton, Neil Williams, 605 Commonwealth Avenue, Boston, Mass.

Szostak, Raymond George, 239 Jackson Street, Lawrence, Mass.

Tebeau, Eleanor Alice, New England Hospital for Women and Children, Dimock Street, Boston, Mass.

Wallwork, David William, 189 Everett Street, Wollaston, Mass.

Weisman, Jacob Irving, Essex Sanatorium, Middleton, Mass.

Weitz, Mark, 2095 Mohegan Avenue, Apartment 3-A, Bronx, N. Y.

Wekstein, Abraham, 703 Walk Hill Street, Mattapan, Mass.

Physicians Registered by Examination Held January 27, 1933

Golden, Lewis Alexander, 44 Stearns Road, Brookline, Mass.

Reed, James Winfield, 25 Bennet Street, Boston, Mass.

Endorsements of National Board Registrations Since Last Report

Alvarez, John Arthur, 721 Huntington Avenue, Boston, Mass.

Boynton, Lyman Crowell, 605 Commonwealth Avenue, Boston, Mass.

Callahan, James Corcoran, 5 Peckham Avenue, Newport, R. I.

Castallo, Mario Alberto, 255 Thayer Street, Providence, R. I.

Clark, Richard James, 12 Wildwood Street, Winchester, Mass.

Costine, Robert Alexander, 42 Massachusetts Avenue, Worcester, Mass.

Cox, Clyde Edward, City Hospital, Worcester, Mass.

Cox, William Vernon, 721 Huntington Avenue, Boston, Mass.

Curran, John Joseph, 73 Bridge Street, Florence, Mass.

Davis, Ada Frances, State Hospital, Westborough, Mass.

Duberstein, Hyman, 71 Holworthy Street, Roxbury, Mass.

Flynn, Joseph Edward, 33 Percival Street, Dorchester, Mass.

Leahey, Brendon Dempsey, Massachusetts Eye and Ear Infirmary, Boston, Mass.

Maguire, James Alfred, 32 Gray Street, Boston, Mass.

Meredith, John Moyer, 170 Kent Street, Brookline, Mass.

Merrill, Dudley, Thorndike Memorial Laboratory, Boston City Hospital, Boston, Mass.

Miller, Ralph Bretney, Mt. Hermon, Mass.

Morris, Albert Ely, 19 Tremlett Street, Dorchester, Mass.

Patterson, John Kenneth, Boston Lying-In Hospital, Boston, Mass.

Pilcher, Lewis Stephen, 2nd, 260 Aspinwall Avenue, Brookline, Mass.

Rector, John Mott, 59 Alton Place, Brookline, Mass.

Sawyer, Geraldine W., 58 Lincoln Street, Melrose, Mass.

Sheffner, Sidney Alexander, 11 Drummond Street, Dorchester, Mass.

Silverstein, Charles, 33 Woolson Street, Mattapan, Mass.

Wills, Arthur Allison, Jr., New Haven Hospital, New Haven, Conn.

MASSACHUSETTS BOARD OF REGISTRATION IN MEDICINE

REPORT OF NOVEMBER 8, 9, 10, 1932 EXAMINATION

Medical School	Number Registered	Number Rejected
Boston University School of Medicine	3	1
College of Physicians and Surgeons, Boston	1	4
Harvard Medical School	11	0
Massachusetts College of Osteopathy	4	9
Middlesex Col. of Medicine and Surgery	18	20
Tufts College Medical School	23	0
Baylor University Medical School	1	0
Chicago College of Osteopathy	0	1
Des Moines Still Col. of Osteopathy	0	2
Georgetown Univ. School of Medicine	2	1
Kansas City Univ. of Physicians and Surgeons	3	14
Kirksville College of Osteopathy	0	10
Laval Univ. Faculty of Medicine	0	2
Missouri Col. Medicine and Surgery	0	1
Philadelphia Col. of Osteopathy	4	6
St. Louis Col. Physicians and Surgeons	0	2
St. Louis University	1	0
University of Illinois	1	0
University of Indiana	1	0
University of Iowa	1	0
University of Michigan	1	0
University of Montreal	0	1
University of Paris	1	0
University of Pennsylvania	2	0
University of Toronto	1	0
University of Vermont	1	1
University of Virginia	1	0
Western Reserve	1	0
	82	75

ANNUAL MOTHERS' DAY CAMPAIGN

Plans have been completed for the third Annual Mothers' Day Campaign sponsored by the Maternity Center Association, the object of which is to save the lives of women who now die needlessly from maternity causes.

According to an announcement received from Mrs. John Sloane, President of the Association, the observance this year, which falls on May 14, will be marked throughout the country by medical societies, women's clubs and welfare organizations that will call the attention of the public to the needs of their communities for improved maternity care.

"Great encouragement," states Mrs. Sloane, "is to be found in the fact that recent statistics show a slight improvement — fewer mothers are dying in childbirth. Leading authorities agree as to what is needed to make motherhood safer — the important thing at present is to awaken the public to the existing conditions, and rouse them to do something about it.

"Material for local campaigns will be provided free to clubs and organizations wishing to make use of Mothers' Day for this purpose. Address the Maternity Center Association, 1 East 57th Street, New York City."

MORTALITY RATES

Telegraphic returns from 85 cities with a total population of thirty-seven million for the week ending February 18, indicate a mortality rate of 12.4 as against a rate of 12.5 for the corresponding week of last year. The highest rate (19.2) appears for Utica, N. Y., and the lowest (5.0) for Akron, O. The highest infant mortality rate (14.9) appears for Nashville, Tenn., and the lowest for Canton, O., Columbus, O., Des Moines, Ia., Hartford, Conn., New Haven, Conn., South Bend, Ind., Tacoma, Wash., Tampa, Fla., Trenton, N. J., and Youngstown, O., which reported no infant mortality.

The annual rate for 85 cities is 12.7 for the seven weeks of 1933, as against a rate of 12.0 for the corresponding period of the previous year.

CORRESPONDENCE

THE ADVANTAGES OF VACCINATION

February 27, 1933.

Editor, The *New England Journal of Medicine*,

Dr. J. Walter Schirmer in his letter published in the February 23 issue of the *Journal* takes us back one hundred years.

Following the publication of Jenner's Inquiry the first quarter of the nineteenth century witnessed a rather widespread adoption of vaccination in New England. No propaganda was used or needed. The people ravaged by centuries of the scourge turned voluntarily and eagerly toward the prospect of exterminating their greatest natural enemy. By 1835, however, a new generation had grown into power, a generation which scarcely knew what smallpox was and which, in the pride of its youth, repealed the old-fashioned quarantine laws and allowed its faith in vaccination to be shaken. That is all that has ever been necessary for smallpox to break forth in any community and break forth it did. This was the first time the medical profession faced the responsibility not only of providing the people with a means of protecting themselves but with convincing them that it was expedient for them to avail themselves of their opportunities. Dr. Horatio Adams of Waltham initiated a movement for the purpose of "satisfying the public mind and restoring that confidence in the protective power of the dis-

ease so essential to its universal adoption". This led in 1855 to the passage of the first compulsory vaccination law. Such laws were then, as now, obnoxious to the liberty-loving citizens and it was not until an epidemic of smallpox killed 1700 people in 1872 and 1873 that compulsory vaccination was really enforced. Now at the end of the first quarter of this century we again have a rather widespread adoption of vaccination here in Massachusetts "the home of the Cradle of Liberty and the site of the Boston Tea Party," phrases which applied in 1833 as well as in 1933.

Very truly yours,

DWIGHT O'HARA, M.D.

DERMATITIS FROM RUBBER GLOVES

To the Editor:

In connection with the paper of Downing "Dermatitis from Rubber Gloves" (The *New England Journal of Medicine*, Vol. 208, No. 4, Jan. 26, 1933, p. 196), the following case is of interest:

> W. J. D., 31, surgeon, is known to be hypersensitive to several chemical compounds, notably procain hydrochloride. On the afternoon of January 6, 1933, he did an operation for which he wore a pair of new gloves, of a type which had never been used at the hospital before. The gloves were dry sterilized, and put on with the same kind of powder as had been used for the previous eighteen months. Slight itching was noticed before the operation, lasting possibly thirty minutes, was completed. After removal of the gloves a severe redness appeared, covering the hands and wrists to the very limit of the cuff of the gown. Vesiculation with profuse flow of serum came within an hour. The dermatitis cleared up in about a week. Rubber gloves had never before caused irritation. It is evident that this new type of glove contains some chemical not present in the dark-brown type.

FRED ELLSWORTH CLOW, M.D.

Huggins Hospital,
Wolfeboro, N. H.
February 28, 1933.

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street, Chicago, Ill.,
February 25, 1933.

Managing Editor,
New England Journal of Medicine,

In addition to the articles enumerated in our letter of January 28 the following have been accepted:

Don Baxter Intravenous Products Corporation
Sterile 5% Dextrose Solution in Vacoliter Container
Sterile 10% Dextrose Solution in Vacoliter Container

Hille Laboratories, Inc.
Colloidal Mercury Sulphide—Hille

Hoffmann-La Roche, Inc.
Ampules Scopolamine Stable — Roche, 1/100 gr., 1 cc.

The following products have been included in the List of Articles and Brands Accepted by the Council But Not Described in N. N. R. (New and Nonofficial Remedies, 1932, p. 487):

Don Baxter Intravenous Products Corporation
Physiological Sodium Chloride Solution in Vacoliter Containers

Yours sincerely,

PAUL NICHOLAS LEECH, *Secretary,*
Council on Pharmacy and Chemistry.

RECENT DEATHS

PARTRIDGE—THOMAS JEFFERSON PARTRIDGE, M.D., died in Cambridge, Mass., February 26, 1933, at the age of seventy-two.

Dr. Partridge was born in Mulgrave, N. S., the son of Asa and Catherine M. Partridge. He graduated from the Boston University School of Medicine in 1889 and practiced in Cambridge for forty-four years.

He was a Fellow of the Massachusetts Medical Society and was prominent in Masonry.

He is survived by his widow, Mrs. Lauretta Partridge; a son, Dr. Winthrop Partridge of Hartford, Connecticut, and two daughters, Miss Helen Partridge and Miss Anne Partridge.

ORTON — LYMAN ROSS ORTON, M.D., died suddenly from heart disease in his home in North Wilmington, Massachusetts, shortly after midnight, on January 13, 1933. He was born in Calais, Vermont, on May 19, 1899. His premedical education was received at the University of Vermont, from which he graduated in 1922. He received his degree in medicine from Boston University Medical School in 1927, and served his interneship at the Newton Hospital and the Worcester State Hospital. He began general practice in Reading, and moved shortly afterward to North Wilmington where he maintained a country practice until his death. He leaves a widow, Sidnia Butler Orton, and a five year old son. He was a member of the American Medical Association and the Massachusetts Medical Society.

NOTICES

CLINICS IN MEDICINE AT PETER BENT BRIGHAM HOSPITAL

On Thursdays at 3:30 P.M. in the Amphitheatre of the Peter Bent Brigham Hospital Dr. Henry A. Christian, Hersey Professor of the Theory and Practice of Physic, Harvard, and Physician-in-

Chief, Peter Bent Brigham Hospital, will give a series of clinics which members of the medical profession are cordially invited to attend. The next clinic will be given on March 16.

Physicians and medical students are also invited to attend ward rounds of the Medical Staff of the Peter Bent Brigham Hospital held from 10-12 o'clock on Saturdays, as well as a clinical-pathological demonstration immediately following these rounds.

RADIO HEALTH MESSAGES

MARCH, 1933

Sponsored by the Public Education Committee of the Massachusetts Medical Society and the Massachusetts Department of Public Health.

Courtesy WBZ. Tuesdays, 4:15 P.M.

March

14 The Use and Abuse of Serums and Vaccines
21 Can We Prevent Diabetes?
28 Hobbies and Health

STATE HOUSE BROADCAST

Sponsored by the Massachusetts Department of Public Health.

Courtesy WEEI. Fridays, 12:45 P.M.

Health Subjects of Public Interest discussed by the Division Directors of the Department.

RADIO HEALTH FORUM

Queries from the public are answered under the sponsorship of the Department of Public Health.

Courtesy WEEI. Fridays, 4:50 P.M.

Questions on Health and Prevention of Disease may be sent to Radio Health Forum, State Department of Public Health, State House, Boston.

HARVARD UNIVERSITY

FREE PUBLIC LECTURES ON MEDICAL SUBJECTS

The Faculty of Medicine of Harvard University offers a course of free public lectures on medical subjects, to be given at the Medical School, Longwood Avenue, Boston, on Sunday afternoons. The lectures will begin at four o'clock and the doors will be closed at five minutes past the hour. No tickets are required.

SUNDAY AFTERNOONS AT FOUR O'CLOCK

March 12—Dr. Shields Warren: Cancer and Radiation Therapy.

March 19—Dr. Randall Clifford: The Tuberculosis Problem Today.

March 26—Dr. W. G. Smillie: A Discussion of the Common Cold.

THE CUTTER LECTURE ON PREVENTIVE MEDICINE

By Louis I. Dublin, 3rd Vice President and Statistician, Metropolitan Life Insurance Company.

Trends in Longevity — Past, Present and Future. Friday, March 17, 1933, and Monday, March 20, 1933, at the Harvard Medical School Amphitheatre, Building E, 5 P.M.

These lectures are given annually under the terms of a bequest from John Clarence Cutter whose will provided that the lectures so given should be styled the Cutter Lectures on Preventive Medicine, and that they should be delivered in Boston and be free to the medical profession and the press. The medical profession, medical and public health students, the press and others interested are cordially invited to attend.

REPORTS AND NOTICES OF MEETINGS

BOSTON SOCIETY OF PSYCHIATRY AND NEUROLOGY

The regular meeting of the Boston Society of Psychiatry and Neurology was held at the Boston Medical Library, February 16, at 8:15 o'clock. Dr. E. S. Abbot presided.

The first paper was by Dr. Karl M. Bowman on "A Case of Psychosis Due to Large Doses of Acetyl Salicylic Acid." In reviewing the literature for the last 25 years the speaker was unable to find any reference to the production of psychoses by large doses of acetyl salicylic acid—and textbooks of pharmacology make scarcely any reference to this possibility.

A 44 year old, married female, of Scotch descent entered the Boston Psychopathic Hospital on January 2, 1932, in a very much agitated condition. Four months before admission she thought that she had neuritis in her shoulders. Four weeks before admission she went to the hospital where arthritis was diagnosed and 180 grains of acetyl salicylic acid given daily. On the third day she began to show mental symptoms, and on the fifth day entered the Boston Psychopathic Hospital. At this time she was disoriented, thought she was being poisoned, could not do simple arithmetic and was unable to name five large cities. The medication was discontinued, and she seemed to lose her queer ideas. She showed some insight into her condition, for she said that she knew her ideas were strange and due to the effect of the medicine. A follow-up study reveals that she has been doing well during the past year, but she now believes that her experiences at the time of the psychosis were real; hence she has recovered without insight.

In the discussion which followed, Dr. Tracy J. Putnam stated that it was his impression that the old practitioners frequently saw the development of such disturbed mental states following the administration of large doses of the salicylates.

Dr. Jacob Finesinger read the next paper on "Induced Variations in Volume Flow Through the Brain Perfused at Constant Pressure." This work was made possible through the invention of a very ingenious device by Dr. Putnam. The Forbes window technique allows a study of the constric-

tion and dilatation of the pial vessels in response to chemical and electrical stimuli. It was desired to see whether there was a similar response on the part of the vessels in the parenchyma of the brain. In order to eliminate the effect of the general circulation on the vessels in the brain substance, the carotid and vertebral vessels were disconnected from the general circulation, and blood taken from the femoral artery and pumped by a motor into the carotid arteries. Each stroke of the pump forced a definite volume of heparinized blood into the carotid arteries. The pump operated against the resistance of the vessels in the brain substance and pia, and by observing the rate of the pump it could be determined whether the substances tested were dilating or constricting the vessels of the brain.

The first experiments were carried on with monkeys, and the pial vessels were not observed. The main results of these experiments are as follows: When the left cervical sympathetic chain is stimulated, there is a rise in the systemic blood pressure; also less volume runs through the brain per minute via the pump. The conclusion follows that the stimulation of the sympathetic leads to active vasoconstriction of the vessels in the parenchyma.

In another set of similar experiments on cats, the Forbes window technique was used in order to see whether the change in the pial vessels followed those in the parenchyma of the brain. It was noted that the slowing of the flow from the pump was concomitant with the constriction of the pial vessels as observed under the microscope.

Vagus stimulation leads to an increase in blood flow to the brain by acting as a vasodilator. Adrenalin produces a decrease in the flow through the brain substance. When large doses of caffeine are administered to cats, there follow convulsions and a vasoconstriction of the pial vessels. This vasoconstriction is followed by vasodilatation. Experiments by the above technique showed that there is a similar response on the part of the vessels in the brain.

In conclusion Dr. Finesinger stated that the blood vessels of the face react more effectively than the pial to stimulation, and that the pial react more effectively than those in the brain substance.

In commenting on these experiments, Dr. Putnam stated that the cerebral blood flow responds passively to changes in the general circulation more than it does by vasoconstriction and vasodilatation.

Dr. John C. Whitehorn read a paper on "Experimental Study of Heart Rate in Relation to Emotion." The speaker first described the mechanical contrivance which enables one to get a continuous record of the heart rate. This is so fashioned that the patient can walk about, and take part in limited physical activity while the observations are being made, and thus escape the cramped feeling that attends most physiological experiments.

These experiments involve the taking of a great many notes in order to correlate the observed psychological state with the changes in the heart rate. An interesting incidental finding in these experiments is that there is a considerable variability in the normal heart rate. The greatest increase in rate is noticed when a patient tells another person about his thoughts, and the most effective measure in producing acceleration of the cardiac mechanism is a "heart-to-heart" talk. When word associations are tested it is noted that acceleration follows in 80 per cent of the patients four seconds after the proper stimulus has been applied. This represents a delayed response and is probably dependent upon stimulation through the sympathetic.

"Deceleration" is more of an immediate response, and probably represents vagus action, for this is quicker in its effect upon the heart rate. A paradoxical finding in these experiments was the slow rates in the agitative-depression psychoses.

GREATER BOSTON MEDICAL SOCIETY

The Greater Boston Medical Society held a symposium on Psychoneurosis on the evening of February 7, 1933, at 8:15 P.M., in the amphitheater of the Beth Israel Hospital. Dr. William Dameshek presided.

Dr. Hans Sachs of Vienna discussed "The Psychoanalyst's Standpoint" and reviewed in a very concise manner some of the basic principles that underlie the teachings of Freud and his school. The psychoanalyst begins with the drive or instinct, and not with the higher faculties of intellect and reasoning. It must not be forgotten that each drive has its origin in the body, and this is one concept of which the psychoanalyst never loses sight. The drive becomes a part of the mind and produces psychic phenomena just as other experiences affect the psyche, and it is at this level that the psychoanalyst begins his study of how the drive influences the higher centers and its translation into behavior.

The psychoanalyst does not overemphasize the sex drive, for hunger, thirst, and other instincts play their rôle in this mechanism. The reason sex has been stressed is that it has been the most neglected of all the drives.

In defining the main concept of sexuality, Dr. Sachs first stated his proposition negatively; it is not a unit force; it is not only present in the sexual act; for it exists at the beginning of life. The first proposition is more or less self-explanatory. Sexuality is not restricted to the sexual act, for perverts find satisfaction in acts that are not connected with the sex organs. The third feature of sexuality is a corollary of the second, for children do not associate their sexuality with their sex

organs necessarily, but rather with other of the most sensitive portions of the body such as the mouth in sucking. As these feelings of sexuality differ from those of the adult in regard to zones, so also they apply to different objects, and are concentrated on people who are close and give satisfaction.

At puberty the genital organs enter the picture. As in all forms of evolution, this gradual change of sexuality involves not a complete destruction of the former process, but a continuance of the lower stages together with the higher.

With these preliminary remarks, Dr. Sachs went on to explain the concept of psychoneurosis and how it appears. The drives do not always develop into maturity. They may be stunted at an early age, but they cannot be destroyed, for they are living forces, and they are disposed of in the primitive manner of repression. Though repressed, they still possess the drive for expression, and this conflict between the repressed and the expressed drive leads to the psychoneurosis.

Does the psychoanalyst say that all psychoneuroses are a result of such a mechanism? Yes, but only in the etiologic sense. Dr. Sachs illustrated his remarks by comparing the repressed drive with the tubercle bacillus. Many other factors are operative in the production of tuberculosis, but the tubercle bacillus is the sine qua non.

The speaker next considered some forms of psychoneurosis. There are actual neuroses without a psychic origin, which are dependent upon sexual misuses. These are the neurasthenias with the symptomatology of headache, irritability, pain in the back, ready fatigue, etc. They may be due to excessive masturbation or other sexual abuses. Anxiety is not an actual neurosis, but may come from sexual excitement without fruition, such as coitus interruptus.

In the conversion hysteria, certain psychological processes end in bodily changes. Freud illustrates his concept of this mechanism by the situation of a master falling in love with his cook. When they quarrel, the cook may not serve him well. The master is the ego, and the cook the bodily organs. The conversion hysteria therefore represents a conflict within the organism in which the drive attempts to usurp the function of the organs for its own purposes.

Dr. Sachs considered the compulsion neuroses very briefly and then went on to discuss certain aspects of therapy. The concept that psychoanalysis is purely an intellectual process is wrong, for it consists of an emotional approach that aims at transference. To attain this end we proceed on the conscious personality toward the unconscious, which cannot be reached directly.

There are no sweeping generalities applicable to the prognosis of individual cases, but an attempt is made so far as possible to restore the personality of a fully matured individual. The drawbacks of therapy are that it is not sure, painless or short. It will be accessible to only a limited number because of the required time, and the patient must be intelligent if any degree of success is to be achieved. It is hoped that in the future some method may be evolved that will be applicable to the patients who see only the general practitioner.

Dr. Joseph H. Pratt next spoke on the "Internist's Standpoint." The speaker stated that in his early experience he had tried hydrotherapy on many psychoneurotic patients and found that it was frequently successful in removing their complaints, but that in the hands of some physicians it did no good. It became apparent that there was some other factor operative besides the simple hydrotherapy.

During the past two years there has been a new clinic at the Boston Dispensary for dealing with the psychoneurotic patients. This clinic is composed of a small group of patients together with the physicians in charge, and here an attempt is made to educate the patients to understand the nature of their difficulty. There were 1169 visits to the clinic in 1931 and 231 new patients during that year.

Dr. Abraham Myerson spoke on the "Neurologist's Standpoint." The speaker began by stating that when there are a great many cures for a disease, one should immediately suspect the efficacy of all of them. In the cure of psychoneurosis it is questionable whether it is accidental regardless of what method is used.

If the psychoneuroses are the result of maladjusted drive, why cannot the drive be approached from the physiological as well as the psychological level? We have three great drives which may be disturbed below the psychological level. The appetite for food is connected with the physiological activity of the gastro-intestinal tract, and the upset of this may lead to a neurosis. One of the most important needs is that for sleep, which is the great restorative mechanism of the animal kingdom aimed to correct excessive expenditure of energy. A disturbance of the ability to sleep by worry, anxiety or fear creates a vicious circle which may establish a neurosis. Then there is the appetite for sex operating in a similar manner. In the treatment of these conditions, the speaker emphasized the necessity of both the physiological and psychological approaches.

The psychoanalyst places great emphasis on the past, and attempts to arrive at the present difficulty through past experiences. The present situation is more important, for it has interwoven all the elements of the past as well as those of the immediate circumstances. In many instances it is therefore not necessary to go very far into the history of the individual to find the main cause for his neurosis.

The papers were discussed by Dr. Solomon. The audience was very enthusiastic over the friendly and courteous manner in which Dr. Sachs and

Dr. Myerson attacked the position of each other in the final discussion.

MASSACHUSETTS PSYCHIATRIC SOCIETY

The last meeting of the Massachusetts Psychiatric Society, held February 23, 1933, at the Psychopathic Hospital, was addressed by Dr. Paul F. Schilder, Research Professor, New York University, on "The Somato-Psyche in Psychiatry and Social Psychology." The meeting was well attended and a discussion by several members and the speaker followed the reading of the paper.

OSCAR J. RAEDER, M.D., *Secretary.*

ST. ELIZABETH'S HOSPITAL

STAFF MEETING

The regular monthly meeting of the staff of St. Elizabeth's Hospital was held in Keith Auditorium, in the hospital at Brighton, on Thursday, February 9.

The meeting was addressed by Dr. Charles Mongan of Somerville.

His title was "The Aspects of the Present Day Practise of Medicine."

THE GREATER BOSTON BICKUR CHOLIM HOSPITAL

The regular monthly staff meeting of the Greater Boston Bickur Cholim Hospital (Jewish Hospital for Chronics) was held at the Nurses' Home Auditorium, 45 Townsend Street, Roxbury, on February 27, 1933.

Dr. Ernest M. Daland, Chief of Staff at the Pondville Hospital, and consultant at this hospital, gave an informal talk on "Treatment of the Advanced Cancer Cases."

The discourse was based upon his own observations and experience, and was, therefore, mostly of a practical nature. Dr. Daland emphasized the necessity of clearing up the diagnosis, as there is frequently a possibility of an erroneous diagnosis. Then again patients with advanced cancer are ignorant of their true condition; they come to the hospital with the hope and confidence of eventually being cured, and expect that something will be done for them. Hence, x-ray, radium, surgical and other measures are employed, even if they are only of a palliative character. In some cases, what appears to be a palliative measure results in prolonging life and making the patient more comfortable and occasionally in effecting even a cure. All this was amply illustrated by stereopticon pictures of actual cases.

Food and good nursing are of vital importance in these cases. A properly balanced diet will prevent pellagra, which is quite common in such patients. The important problems of nursing are the prevention of trophic ulcers and overcoming the odors.

Then comes the problem of relieving pain. Wherever possible, opiates should be omitted, and aspirin substituted. Among the opiates Dr. Daland found diolaudin, a new opium derivative, sometimes giving better results than the old ones, and pantopon working better than morphine. He has not found codein to be a habit forming drug. X-ray and radium frequently proved to be important agents for the relief of pain. Finally, operations, when necessary, prove to be the best pain relievers, for example, tracheotomy, when the tumor interferes with respiration, or colostomy in cancer of the rectum, or suprapubic drainage in malignancy of the prostate.

Discussion followed and questions were answered. An appropriate resolution was passed, eulogizing the late Dr. Harry Finkelstein. A social half hour and refreshments completed the meeting.

M. J. KONIKOW, M.D., *Recorder.*

WILLIAM HARVEY SOCIETY

Dr. Lawrason Brown of the Trudeau Sanatorium, Saranac Lake, New York, addressed the William Harvey Society of the Tufts College Medical School on Friday evening, February 10, in the amphitheatre of the Beth Israel Hospital. Dr. Joseph Hersey Pratt, Professor of Clinical Medicine at Tufts, was chairman of the meeting.

Dr. Brown stated that he wished to sketch part of the history of pulmonary tuberculosis. He told first of the great epoch-making discoveries in the field, the discovery of percussion by Auenbrugger in 1761, the development of sanatorium treatment a century later in 1860 by Brehmer, the "rest" treatment of Dettweiler, Brehmer's pupil, the discovery of x-rays at the beginning of the present century, and now, the surgical treatment of tuberculosis. The speaker briefly reviewed the great advances in all lines of human endeavor that took place in the nineteenth century, along with the changes in medicine and the beginning of the laboratory era. He then took the audience with him on a trip to Saranac in the early nineteen hundreds, and gave a vivid and graphic description of Trudeau, the man, and Trudeau, the tuberculosis expert.

Dr. Brown reviewed the history of the sanatorium treatment of tuberculosis. George Boddington, born in Warwickshire, England, in 1799, was the probable originator of the idea, although his attempt was rather an abortive one. He deplored the "shutting up" system employed in England and elsewhere at the time, and advised inland haunts and the free, open air of the country rather than a city environment in treatment. He opposed the antiphlogistic methods of treatment and advocated the proper use of nourishing diet with wine, anodynes, sedatives, etc. For the healing of cavities and ulcers in the lung he believed in the free use of a pure atmosphere, with plenty of exercise, in bad or good weather. He used vinegar and water baths in the treatment of night sweats and attempted by all means to maintain bodily vigor. He spoke of the advantages of

sanatoria, of tuberculosis specialists, and of hospitals for the poor near large cities and especially devoted to the care of tuberculosis. As is often the case, his ideas on diet and other subjects were vigorously attacked in the medical publications of the day.

Hermann Brehmer in 1857 was really the father of the sanatorium, where he advocated good food, graded exercises, and hydrotherapy in the treatment of tuberculosis, and he believed that the disease was always curable in the early stages. Republished in 1869, his work was received better than it had been before.

Peter Dettweiler, a student of Brehmer, contributed to the advance of treatment by advocating *rest* as a prime essential in the arresting and curing of the disease. Brehmer believed in specific climates in treatment, Dettweiler emphasized the importance of the individual and rest.

Dr. Brown next described Trudeau's sanatorium, told of his surroundings, his faithful employees, who worked for just a pittance, his examination of patients, his discouraging results with the recently advocated tuberculin, his attempts at the production of a serum for curative use, his criteria for diagnosis and cure, and his emphasis of the significance of a positive sputum. The carefulness of the great expert's physical examination and the acumen with which he elicited and interpreted signs were stressed.

The speaker went on to tell of the history of the findings and interpretation of sounds elicited from the lungs, giving a fascinating account of Laennec's (1781-1826) invention of the stethoscope. He told of Laennec's first roll of paper which applied, one end to a woman's chest and the other to the physician's ear, accentuated the heart sounds in the listener's ear. Then came the fashioning of the cylindrical piece of wood, about 12 inches long, with a central hole ⅜ of an inch in diameter, the first stethoscope. The hardships which beset Laennec, the ridicule from others, and his overwork coupled with gout and nervous exhaustion, his recuperation in his beloved Brittany, his final republication of his work in 1826 and his death, from "pain, fever, and cough," in August of the same year at the young age of 45, were vividly portrayed. Laennec apparently knew the signs of tuberculosis, abscess, gangrene, infarction, pneumothorax, emphysema, and many other pulmonary conditions.

NEW ENGLAND HEART ASSOCIATION

Corrected Notice

There has been some change in the speakers for the New England Heart Association meeting on April 5.

Subject: Disorders of the Pulmonary Circulation.

(1) Physiology of the Pulmonary Circulation. Dr. Herrman L. Blumgart.

(2) Roentgen Study of the Pulmonary Circulation in Health and Disease. Dr. Hugo Roesler.

(3) Pathological and Clinical Aspects of the Pulmonary Circulation. Dr. Paul D. White and Dr. Oscar Brenner.

(4) Pulmonary Embolectomy. Dr. Elliott Cutler.

Discussion will be opened by Dr. Howard B. Sprague.

Howard B. Sprague, M.D.,
Chairman of the Program Committee.

WATERTOWN PHYSICIANS' SOCIETY

The regular monthly meeting of the Watertown Physicians' Society will be held Tuesday evening, March 14, at 8:30, 128 Mt. Auburn Street, Watertown.

Speaker: Dr. Joseph Rockett.

Subject: Foci of Infection and Oral Sepsis.

All interested physicians are invited to attend.

Eugene F. Gorman, M.D., *Secretary.*

THE NEW ENGLAND PHYSICAL THERAPY SOCIETY

Invitation to Attend the March Meeting

The New England Physical Therapy Society extends to the Profession an invitation to attend a specially arranged program on the treatment of Pneumonia under the direction of Dr. William D. McFee of Boston, at its regular meeting at 8 P.M. on Wednesday, March 15, in Sprague Hall at the Boston Medical Library.

PROGRAM

Pneumococcus Lobar Pneumonia (with lantern slides). Dwight O'Hara, M.D., Boston, Mass.

Physical Treatment in Pneumonia. Byron Sprague Price, M.D., New York City.

Discussion will be opened by Dr. William E. Preble, Boston.

This program is the outgrowth of great interest in the subject as evidenced by many requests for such a program. The Society is indeed fortunate to have secured for its presentation men so eminently qualified to speak on the various phases of the subject.

Arrangements have been made for a larger auditorium so that there may be ample accommodations for all who wish to attend. *Members are asked to note the change of meeting place for this meeting.*

Visiting physicians are cordially invited to participate in the discussion.

A Round Table Dinner will precede the meeting as usual at 6:30 at the Boston Square and Compass Club. Arthur H. Ring, M.D., *Secretary.*

SOUTH END MEDICAL CLUB

The next regular meeting of the South End Medical Club will be held at the office of the Boston Tuberculosis Association, 554 Columbus Avenue, Boston, on Tuesday, March 21, 1933, at 12 noon.

The speaker will be Samuel A. Levine, M.D., Assistant Professor of Medicine, Harvard Medical School; Senior Associate in Medicine, Peter Bent

Brigham Hospital; Visiting Physician, Beth Israel Hospital; and his subject: "Factors Concerning Prognosis in Heart Disease."

The usual luncheon will be served at 1 o'clock. All physicians are cordially invited to attend.

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

The Middlesex East District Medical Society will meet at the Legion Bungalow, Melrose, on March 15. Dinner will be served at 6:30.

Dr. William P. Murphy will speak on "Recent Advances in the Treatment of Pernicious Anemia."

Dr. Howard A. Bouvé will speak on "Splenic Trauma."

ALLAN R. CUNNINGHAM, M.D., *Secretary.*

WILLIAM HARVEY SOCIETY

The next meeting of the William Harvey Society will be held Friday, March 10, at 8 P.M., in the auditorium of the Beth Israel Hospital.

Speaker: Dr. Burrill B. Crohn, President of the American Gastro-Enterological Association. Subject: "Abdominal Pain."

Chairman: Dr. Harry Linenthal, Professor of Clinical Medicine, Tufts College Medical School.

HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Hospital Amphitheatre (Van Dyke Street entrance), Tuesday evening, March 14, at 8:15 o'clock.

PROGRAM

1. Presentation of Cases.
2. Recent Work Upon Cerebral Circulation.
   a. Anatomy and Clinical Implications. Dr. Stanley Cobb.
   b. Observations on the Cerebral Circulation in Animals. Dr. Tracy J. Putnam.
   c. Observations on the Cerebral Circulation in Man. Dr. William G. Lennox.

JOHN HOMANS, M.D., *Secretary.*

NEW ENGLAND ROENTGEN RAY SOCIETY

The March meeting will be held at the Boston Art Club, Boston, Mass., March 17, 1933, at 8 P.M. There will be a dinner preceding the meeting at the Club at 6:45 P.M.

SCIENTIFIC SESSION

1. Renal Tract Pathology. Dr. P. F. Butler.
2. Skull Practice. Dr. M. C. Sosman.
3. Spine. Dr. R. D. Leonard.
4. Radiation of the Malignant Conditions of the Skin, Lip and Mouth. Dr. Richard Dresser.
5. Sinuses, Mastoids, Esophagus. Dr. A. S. MacMillan.
6. Roentgen Diagnosis of Heart Lesions. Dr. George Levene and Dr. Frank E. Wheatley.
7. Changes Produced in Growing Bones by Non-Infectious Diseases. Dr. E. C. Vogt.

T. R. HEALY, M.D., *Secretary.*
370 Marlborough Street, Boston, Mass.

NEW ENGLAND HOSPITAL FOR WOMEN AND CHILDREN

The regular clinical conference of the New England Hospital for Women and Children will be held at the hospital, Dimock Street, Roxbury, on Thursday, March 16, at 8 P.M. Dr. J. E. Vance will speak on Endocrine Disturbances and Their Treatment, with case histories and a period of discussion. ALICE H. BIGELOW, M.D., *Secretary.*

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

March 9—Boston Health League. See page 516, issue of March 2.
March 10—William Harvey Society. See notice elsewhere on this page.
March 12—Harvard University. Free Public Lecture on Medical Subjects. See page 567.
March 14—Harvard Medical Society. See notice elsewhere on this page.
March 14—Watertown Physicians' Society. See page 571.
March 15—New England Physical Therapy Society. See page 571.
March 16—Clinics in Medicine at Peter Bent Brigham Hospital. See page 566.
March 16—New England Hospital for Women and Children. See notice elsewhere on this page.
March 17—New England Roentgen Ray Society. See notice elsewhere on this page.
March 17—Cutter Lecture on Preventive Medicine. See page 567.
March 21—South End Medical Club. See page 571.
April 1 and June 13—The American Board of Obstetrics and Gynecology. See page 233, issue of January 26.
April 5—New England Heart Association. See page 571.
May 8, 9, and 10—American Gynecological Society. See page 516, issue of March 2.
October 9-12—American Public Health Association. See page 403, issue of February 16.

DISTRICT MEDICAL SOCIETIES

ESSEX NORTH DISTRICT MEDICAL SOCIETY

May 3—Wednesday, Annual Meeting. Program to be announced.

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

Tentative Program

Wednesday, April 5, 1933—Essex Sanatorium, Middleton. Clinic 5 P.M. Dinner 7 P.M. Speaker: Dr. Wilson G. Smillie, Professor of Public Health Administration, School of Public Health, Harvard University. Subject: Common Colds.
Thursday, May 4, 1933—Censors' Meeting, Salem Hospital, 3:30 P.M.
Tuesday, May 9, 1933—Annual Meeting. Salem Country Club, Forest Street, Peabody. Golf in afternoon; greens fee $2.00. Dinner at 7 P.M. Speaker: Dr. George Burgess Magrath. Subject to be announced later. Ladies invited.

R. E. STONE, M.D., Secretary.

FRANKLIN DISTRICT MEDICAL SOCIETY

Meetings will be held at the Weldon in Greenfield on the second Tuesday of March and May.

CHARLES MOLINE, M.D., Secretary.

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

March 15—See notice elsewhere on this page.
May, at the Meadowbrook Club, Reading.

ALLAN R. CUNNINGHAM, M.D., Secretary.

NORFOLK DISTRICT MEDICAL SOCIETY

March 28, 1933—Time, place and subject to be announced. Speaker will be Dr. J. P. O'Hare.
May—Annual Meeting. Time, place and subject to be announced.

FRANK S. CRUICKSHANK, M.D., Secretary.
1695 Beacon Street, Brookline.

SUFFOLK DISTRICT MEDICAL SOCIETY

Wednesdays at 8:15 P.M.

March 29, 1933—Clinical Program, Massachusetts General Hospital.
April 26, 1933—Annual Meeting. Election of Officers. Scientific Program—Titles and speakers to be announced later.

The Medical Profession is cordially invited to attend these meetings.

WILLIAM H. ROBEY, M.D., President,
LELAND S. McKITTRICK, M.D., Secretary.

WORCESTER DISTRICT MEDICAL SOCIETY

Wednesday, April 12—Dinner and scientific meeting at the Rutland State Hospital. Scientific program to be announced later.
Wednesday, May 10—The Annual Meeting. Place and program to be announced later.

ERWIN C. MILLER, M.D., Secretary.